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Prelude to Offensive Action in the Pacific

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Historical Division, Department of the Army Special Staff

This article forms a large part of Chapter I of *Guadalcanal: The First Offensive*, soon to be published by the Historical Division, Department of the Army Special Staff, in the series, *The U.S. Army in World War II*.—The Editor.

"Offensive Operations will be conducted"

The Joint Directive of 2 July 1942

ON 2 July 1942 the United States Joint Chiefs of Staff ordered the Allied forces in the Pacific to mount a limited offensive to halt the Japanese advance toward the line of communications leading from the United States to Australia and New Zealand. There were then available so few warships, transports, and cargo ships, so few trained troops, so few weapons and supplies that any offensive in the Pacific, for which the United States would have to provide most of the forces, would necessarily be limited in scale. Yet it was necessary to halt the Japanese, who were then moving ever nearer to the flank of the tenuous line of communications.

The decision to mount a limited offensive in the Pacific was a logical corollary to earlier strategic decisions. The highest political and military authorities of the

United States and Great Britain had decided to defeat Germany before concentrating on Japan. The world had been divided into spheres of primary military responsibility, and the United States had assumed responsibility for directing the war in the Pacific. In March 1942 the Joint Chiefs of Staff had agreed to assemble forces in Britain during that year to mount an offensive in Europe at the earliest possible moment; in the Pacific Allied strategy was to be limited for the time being to containing the Japanese with the forces then committed or allotted. But if Australia and New Zealand were to be held, then the line of communications from the United States would also have to be held. Forces to defend the Allied bases along the line, including New Caledonia, the Fijis, and Samoa, had already been sent overseas. Insufficiency of ships, men, and weapons prevented these bases from being developed into impregnable fortresses, but they were made mutually supporting, each island being made strong enough to hold off an attacking enemy until air and naval striking forces could reach the threatened position.

To conduct operations in the Pacific, two separate commands, the Southwest

Before the Joint Chiefs of Staff could issue orders for the attack to check the Japanese threat against Australia, there were serious problems of command and employment of forces that had to be settled

Pacific Area and the Pacific Ocean Areas, had been established at the end of March 1942. The Southwest Pacific Area included the Philippine Islands, the South China Sea, the Netherlands East Indies (except Sumatra), the entire Solomon Islands, Australia, and the waters to the south. The post of Supreme Commander of Allied forces in this vast area was given to General Douglas MacArthur, who had just reached Australia from the Philippines.

The even vaster Pacific Ocean Areas included nearly all the remainder of the Pacific Ocean, and was divided into three subordinate areas—the North, Central, and South Pacific Areas. The latter, which included most of the bases along the line of communications, lay south of the Equator and west of 110° W. and east of the Southwest Pacific Area. Thousands of islands, including New Zealand, New Caledonia, and the New Hebrides, Santa Cruz, Fiji, Samoan, Tongan, Cook, and Society Islands, and over a million square miles of ocean comprised the South Pacific Area.

Admiral Chester W. Nimitz, Commander in Chief, U.S. Pacific Fleet, was appointed as Commander in Chief of Allied Forces in the Pacific Ocean Areas except those responsible for the land defense of New Zealand. Nimitz, with headquarters at Pearl Harbor, was to command the Central and North Pacific Areas directly, but was ordered to appoint a subordinate who would command the South Pacific Area. Both MacArthur and Nimitz were responsible to the Joint Chiefs of Staff in Washington.

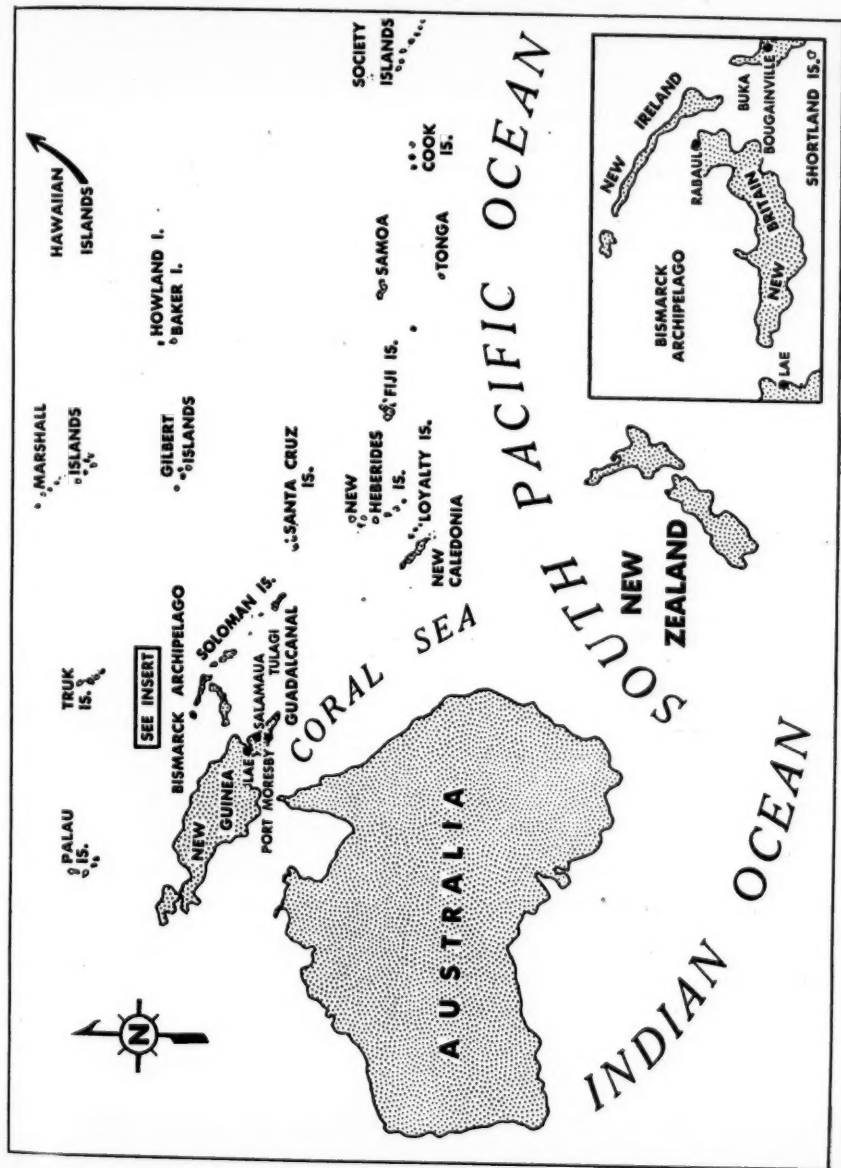
Japanese Advances

The Japanese offensive which opened on 7 December 1941 had brushed aside or destroyed all the opposing forces. From December 1941 until May of the following year, the Japanese had been expanding their empire; they also established a perimeter of bases to protect their gains. When Rabaul, a small town

on New Britain in the Bismarck Archipelago, fell on 23 January 1942, the Japanese had gained a major objective. Rabaul lay just 1,170 nautical miles southeast of the Japanese bases in the Palau Islands, and 640 miles south of Truk in the Carolines. Easily defended, Rabaul possessed the best harbor in the entire archipelago, as well as excellent sites for air fields. A key base for the Japanese effort to dominate both eastern New Guinea and the Solomon Islands, it was to be the focus of the Allied war effort in that area for two years. The New Guinea coast lies only 440 nautical miles southwest of Rabaul, and the center of the north coast of Guadalcanal in the Solomons is only 565 nautical miles southeast of Rabaul. Since bombers from Rabaul could easily attack both areas, the Japanese were well situated for the push to the south which began almost at once. By May 1942 they had completed the occupation of the Bismarcks, established bases on the north coast of New Guinea, and built air fields in the Solomons, on Buka, Bougainville, and the Shortlands.

They also assembled a carrier task force and an amphibious force at Truk to attack Port Moresby. A detachment of the amphibious force landed at Tulagi in the Solomons on 3 May. The main body of the Japanese force, however, failed to capture Port Moresby. Intercepted by Allied naval and air forces in the Coral Sea in May, the Japanese lost one aircraft carrier and were forced to withdraw. Allied forces also struck at Tulagi during the Coral Sea engagement.

The Japanese then turned their attention to Midway and the Aleutian Islands. Orders issued by Imperial General Headquarters during the opening phases of the Coral Sea battle had directed the Commander in Chief of the Combined Fleet to "co-operate" with the Army in invading Midway and the Aleutians. These attacks were to be followed by invasions,



in co-operation with the Seventeenth Army, of "strategic points around the New Caledonia, Fiji, and Samoa Islands," all of which were important bases along the Allied line of communications.

In June the Japanese obtained a foothold in the Aleutians, but their main effort against Midway did not succeed. Four of their aircraft carriers were sunk off Midway, and the Japanese withdrew without attempting to land on the island. This engagement, so disastrous for the enemy, did much to restore the naval balance in the Pacific, and enabled the Allies to take the initiative.

On 11 July Imperial General Headquarters cancelled the orders which had called for invasions of Midway, New Caledonia, the Fijis, and Samoa. But at Tulagi the Japanese had already built a seaplane base which had originally been designed to support the attack on Port Moresby, and began building an air field near the mouth of the Lunga River on the north coast of Guadalcanal, about twenty miles from Tulagi. The field, which was intended to provide a base for sixty naval planes, was to have been completed by 15 August. If the Japanese intended to continue their advance, the next logical steps would certainly have consisted of a series of moves through the New Hebrides toward the Fijis, Samoa, and New Caledonia. The seaplane base at Tulagi and the air field under construction on Guadalcanal did not yet directly threaten the Allied line of communications, but they portended a serious threat.

When the Japanese moved to Guadalcanal, Allied coastwatchers hidden in the mountains reported the fact to Allied headquarters in Australia. This information was transmitted to the Joint Chiefs of Staff in Washington on 6 July 1942. But even before the Japanese were known to have begun their air strip on Guadalcanal and before Imperial General Headquarters cancelled the orders to invade

New Caledonia, Samoa, and the Fijis, the Joint Chiefs of Staff had issued orders for the limited offensive in the area to protect the line of communications to Australia.

The Problem of Command and Strategy

With the Japanese threatening to cut the line of communications to Australia, or to attack Australia directly, the American officers responsible for the conduct of the Pacific war had agreed that an offensive should be mounted to end the threat. Before the Joint Chiefs of Staff could issue orders for the attack, they had to settle serious problems regarding command and the employment of forces.

The Army's Plan

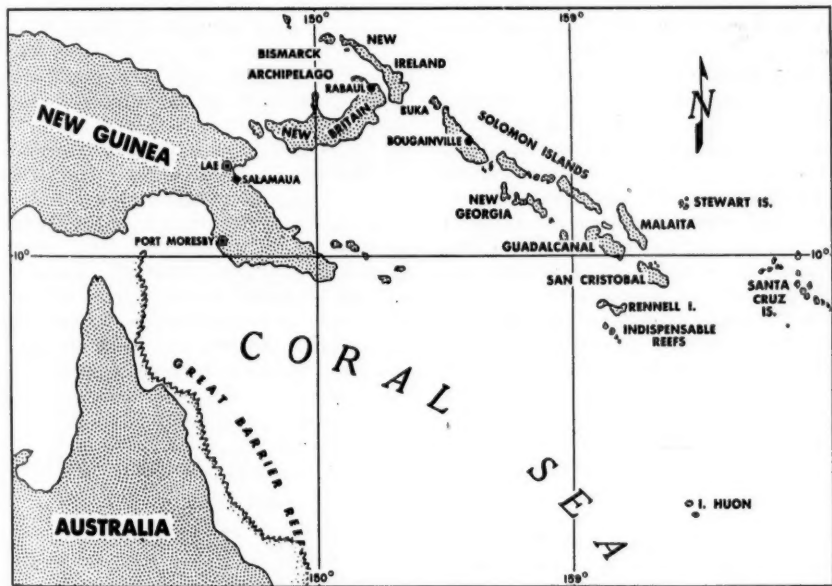
As early as 8 May, after the Japanese defeat in the Coral Sea, General MacArthur was preparing plans for an offensive. He pointed out that the Japanese victories in the Philippines and Burma would free at least two infantry divisions and additional aircraft, and that the enemy forces in Malaya and the Netherlands East Indies might also be moved forward. With the Japanese still able to move unhindered along interior lines of communication, they could attack New Guinea and the line of communications between the United States and Australia. To prevent these attacks, MacArthur wished to take the offensive, but desired that his naval forces be strengthened by aircraft carriers, and that more planes and troops be added to his air and ground forces.

At the same time Admiral Nimitz was contemplating the possibility of attacking Tulagi in the Solomons, a project which found favor with Admiral Ernest J. King. Admiral Nimitz first suggested using a Marine raider battalion for the attack, but Admiral King and General George C. Marshall agreed with MacArthur on 1 June that one raider battalion would be too small a landing force. MacArthur's plans envisaged a larger operation than a raid. Believing that one Jap-

anese regiment was then holding Tulagi, but was not thoroughly dug in, and that one division was stationed at Rabaul, he desired to mount a large-scale offensive against the Solomons and New Britain. He suggested that as more troops became available, the South Pacific forces might profitably move farther forward into the Loyalty, Santa Cruz, and New Hebrides Islands.

After the great Japanese defeat off

ashore once a beachhead had been taken, but they could not take a beachhead themselves. The objectives lay beyond range of Allied fighter aircraft. Close air support would have to be provided by aircraft carriers, but none were assigned to the Southwest Pacific Area. MacArthur therefore requested that one trained amphibious division and a suitable task force be made available at the earliest possible date. If these forces seized the New



Midway on 3-4 June 1942, MacArthur, on 8 June, again suggested taking the offensive at an early date, with the New Britain-New Ireland Area as the objective. Available trained troops in the Southwest Pacific Area then included the 32d and 41st U.S. Infantry Divisions, and the 7th Australian Division. These divisions, however, were not trained or equipped for amphibious operations. They could support an amphibious attack by moving

Britain-New Ireland Area, the Japanese would be forced back to Truk.

At the same time the Joint Chiefs of Staff were considering the possibility of persuading the British to use the Eastern Fleet against Timor, or against the Andaman and Nicobar Islands in the Bay of Bengal, in coordination with the offensive effort of the United States.

General Marshall, who favored placing the prospective offensive under MacAr-

thur's command, explained his views to Admiral King on 12 June. He believed that an attack designed to retake eastern New Guinea and New Britain could be mounted in early July. If the attack succeeded, it might be followed by a raid on Truk. The 1st Marine Division, part of which was soon to land at Wellington, New Zealand, could make the initial amphibious assault against the Japanese positions. This division, plus twelve transports and four destroyer-transport, could be assembled at Brisbane by 5 July. The three trained divisions in Australia could support and eventually relieve the Marine division after adequate beachheads had been established and normal land warfare had begun. One hundred and six heavy bombers, 138 medium bombers, 48 light bombers, and 371 fighters, to be assembled in Australia by 1 July, would provide land-based air support. Additional bombers could be dispatched from Hawaii. Army fighters and bombers could support attacks against Lae and Salamaua. Bombers could reach Rabaul, but the fighters, from their bases in Australia and Port Moresby, could not fly that far. Aircraft carriers would therefore be required to provide fighter support, and other naval surface vessels would naturally be needed. Unity of command would be essential to success.

General Marshall had also directed MacArthur to prepare tentative plans along these lines. The War Department and MacArthur both believed that the operation, since it would take place in his area, should be under MacArthur's control. As the forces involved would be largely naval, the War Department suggested that a naval officer, under MacArthur, be placed in command of the task force which would execute the operation.

The Navy's View

The Navy's ideas differed from those of the Army. Admiral King presented his views to General Marshall on 25 June.

Regretting that the United States had not been able to attack the Japanese immediately after Midway, he thought that the offensive should be launched about 1 August by a task force under the control of Admiral Nimitz. The immediate objectives would be positions in the Solomons in the Southwest Pacific Area and in the Santa Cruz Islands in the South Pacific Area, 335 nautical miles east-southeast of Guadalcanal. The ultimate objective would be the New Guinea-New Britain area.

Admiral King believed that the force should include at least two aircraft carriers with accompanying cruisers and destroyers, the 1st Marine Division and transports of the South Pacific Amphibious Forces, five Marine air squadrons, and the land-based planes from the South Pacific. The Southwest Pacific would furnish the task force with land-based aircraft, surface ships, and submarines. The permanent occupation of the Santa Cruz and other islands in the South Pacific Area would be effected by the Commander of that area with forces to be designated later. The captured islands in the Solomon-New Guinea area would be permanently occupied under MacArthur's direction by troops moved forward from Australia on ships provided by Nimitz.

Army-Navy Discussions

Admiral King's plans did not find favor in the War Department. Navy planners had been discussing the projected offensive with members of the Operations Division of the War Department General Staff. The Army planners estimated that Japanese ground forces in the target area included two brigades around Rabaul, about 1,000 Special Naval Landing Force troops at Lae and Salamaua, two companies on New Ireland, one battalion in the Admiralties, a small garrison on Bougainville, and a regiment in the Tulagi area. One hundred and twenty-six aircraft, including bombers, fighters, and

reconnaissance planes, were believed to be located in New Britain, New Ireland, New Guinea, and the Solomons. It was considered possible that thirty-three bombers on Timor would be used to reinforce Rabaul. Japanese naval strength in the target area included only small units, but strong forces were believed to be based at Truk. The Operations Division concluded that these forces were capable of attacking Port Moresby, the east coast of Australia, or New Caledonia, and could be expected to try to take Port Moresby, which was necessary as a base for operations against northern Australia. Loss of Port Moresby would deprive the Allies of the only advanced base from which they could strike Lae, Salamaua, and Rabaul. If the Allies were to attack the Japanese at Rabaul, the enemy would be able to move troops from Tulagi and the Admiralties to Rabaul in four days, although no strong reinforcements could be sent to Rabaul in less than three weeks. Unless the Japanese air installations at Rabaul could be reduced by preparatory bombardment, the projected offensive would meet strong resistance from land-based planes.

The seizure of Rabaul, followed by the seizure of eastern New Guinea, New Ireland, New Britain, and the Solomons, would deprive the Japanese of bases from which they could attack Australia and the Allied-held islands in the South Pacific, and advance the radius of Allied reconnaissance and air attack as far as Truk. Such a plan would require the three available infantry divisions and aircraft in Australia as well as the five cruisers, twelve destroyers, and thirty submarines in the Southwest Pacific Area, in addition to the 1st Marine Division, twelve transports and cargo ships, and at least two aircraft carriers from the Pacific Ocean Areas. The Navy's plan to attack and occupy Tulagi first and then move progressively against Rabaul would require a naval task force, an Army garri-

son force and additional land-based aircraft from Australia and Port Moresby, with all forces under naval command. Neither plan could be executed before August, as the necessary shipping could not be assembled in time.

The Operations Division concluded that a plan to take Rabaul first offered the greater promise of success, since it would provide for the maximum use of available forces and would strike directly at the primary objective. A quick stroke at Rabaul, the key Japanese base in the entire area, could be supported by land-based bombers although aircraft carriers would have to provide fighter support. Once Rabaul fell—the Operations Division believed—the remaining Japanese positions in the area, isolated beyond their supply lines, would be rendered impotent. The Navy plan, on the other hand, involved a gradual move from Tulagi to Rabaul. The capture of Tulagi, an operation in which the Allied forces could be supported by long-range bombers, would not be difficult, but two factors would militate against the success of the Navy plan. First, further advances northward toward Rabaul would be subjected to continuous aerial bombardment, and second, a step by step advance would warn the Japanese and permit them to reinforce Rabaul with air and ground forces before enough Allied strength could be mustered to strike directly at Rabaul.

On the basis of these conclusions, the Operations Division recommended that Rabaul be attacked first, that the Navy provide the Marine division and twelve transports and at least two carriers and supporting vessels, that the attack be launched as early as possible, and that the operation be conducted under MacArthur's command.

The Army and Navy plans differed considerably, but the greatest obstacle to agreement between the services was the selection of a commander. Army planners

reported to General Marshall that they would be able to resolve all differences with the Navy planners except that of command. According to the Army point of view, unity of command would be essential since the offensive would involve not only the amphibious assault force and land-based aircraft, but also the movement and supply of the garrison force and co-ordination with the Allies. Since the offensive would take place in MacArthur's area, he should control it, and the tactical command of the attacking force should be in the hands of a naval officer.

The Navy agreed that unity of command was essential, but feared that, if the high command were given to MacArthur, he might dangerously expose the aircraft carriers by placing them in the waters between the Solomons and New Guinea within range of land-based aircraft. Tulagi would have to be reduced first to lessen the hazard to the carriers. Command of the attacking force, the Navy planners concluded, should go to Nimitz' subordinate, Vice Admiral Robert L. Ghormley, the Commander of the South Pacific Area and South Pacific Force. The Army planners recommended to General Marshall, on 24 June, that he and Admiral King personally choose a commander for the invasion.

Informed by General Marshall of the Navy's opposition to his plan, MacArthur responded vigorously. The Navy, he asserted on 24 June, had misunderstood his proposals. The Operations Division may also have misunderstood his plans, for he stated that whereas Rabaul was the ultimate objective, direct assault upon it would be rendered impossible by the limited amount of land-based air support which could be brought to bear from present bases. His plans involved a progressive advance against the Solomons and New Guinea's north coast to obtain air fields from which to support the final attacks against Rabaul and to cover the

naval surface forces. He felt that only confusion would result if ground forces from the Pacific Ocean Areas were employed inside the Southwest Pacific Area under a naval command exercised from a distant headquarters, as the Navy had suggested. The Southwest Pacific Headquarters was the logical agency to direct the offensive, for the necessary intelligence, reconnaissance, and planning agencies were all in its area, and MacArthur believed that he should command any large operation through his air, ground, and surface commanders. Finally, he opposed the idea of trying to retake Timor at that time, on the ground that there were not enough air or naval forces in the area to support such an effort.

An exchange of memoranda between General Marshall and Admiral King on 26 June failed to produce agreement. General Marshall opposed the plan to place the invading force under Nimitz' control. He sought to allay the Navy's fears for the safety of the aircraft carriers by suggesting that the Joint Chiefs of Staff could judge the arrangements for the employment of naval forces, and he reiterated the argument that, since the ultimate objectives lay in MacArthur's area, he should command. Admiral King, still unconvinced, felt that Nimitz should command. At the conclusion of the amphibious phase, King suggested, MacArthur could control further movements into the target area; the movements would be supported by the Pacific Fleet. South Pacific operations would be primarily amphibious and naval in character. As the nearest bomber base in Australia lay nearly 1,000 miles away from Tulagi, the Southwest Pacific Area would be able to render little support at first. Admiral King therefore insisted on a naval commander, and he suggested that the Navy would begin operations immediately even if Army forces in the Southwest Pacific Area gave no support.

At the same time, Admiral King, believing that the Army might delay its participation in the attack, directed Nimitz to proceed with preparations for an offensive in the Solomon and Santa Cruz Islands and to make recommendations both regarding the movement of Army aircraft from Hawaii and support by Southwest Pacific forces. Nimitz immediately began preparation, as did Ghormley in the South Pacific. The commanding general of the 1st Marine Division, a part of which had just landed in Wellington, was ordered to prepare plans and load ships for an attack against the Solomon and Santa Cruz Islands. Nimitz requested of the Joint Chiefs of Staff that eight Army B-17's and thirteen Army B-26's be moved from Hawaii to New Caledonia, and the same number from Hawaii to the Fijis, to be retained under his control. He also asked that the surface ships and all available submarines of the Southwest Pacific naval forces be made available to Ghormley, and that long-range aircraft from the Southwest Pacific lend whatever support Ghormley should recommend.

The implications in Admiral King's belief that the Army might not fully participate disturbed General Marshall, for he believed that all available support should be given to the offensive regardless of the outcome of the command dispute, and he sent orders to that effect to MacArthur. He decided to settle the disagreement by personal conferences with Admiral King. The two officers negotiated, in person, and in writing, from 29 June until 2 July. Admiral King suggested that Ghormley command the offensive until the Tulagi operation was over, and that thereafter MacArthur control the advance toward Rabaul. The Army still had some objections, but the compromise was adopted. To prevent depleting MacArthur's area of trained troops, General Marshall insisted that occupation forces for Tulagi be drawn from

the South Pacific instead of from the Southwest Pacific Area. By 2 July it seemed possible that three aircraft carriers instead of two could be provided, although the German threat to the British position in the Middle East made the raid on Timor seem unlikely.

The Decision

On 2 July General Marshall and Admiral King, having reached agreement on all questions at issue, signed the "Joint Directive for Offensive Operations in the Southwest Pacific Area Agreed on by the United States Chiefs of Staff." "Offensive operations," the opening paragraph started, "will be conducted with the ultimate objective of seizure and occupation of the New Britain-New Ireland-New Guinea Area." The operations were to be divided into three tasks. Task One was the seizure and occupation of the Santa Cruz Islands, Tulagi, and "adjacent positions," and would be under the command of an officer designated by Nimitz. MacArthur was to attach the necessary naval reinforcements and land-based aircraft to the South Pacific forces, and to interdict enemy air and naval activity west of the target area. Task One would begin on 1 August.

Task Two, the seizure and occupation of the remainder of the Solomons, of Lae, Salamaua, and of the northeast coast of New Guinea, would be under MacArthur's command, as would Task Three, the seizure and occupation of Rabaul and adjacent positions in the New Britain-New Ireland area. The composition of forces, the timing of the tasks, and the passage of command would be determined by the Joint Chiefs of Staff.

The boundary between the Southwest Pacific and the South Pacific Areas was to be moved west to 159° E., a change which placed the entire Task One target area—Tulagi, Guadalcanal, and Florida, as well as the Russells, Malaita, and San Cristo-

bal—in the South Pacific under Ghormley, but left the remainder of the Solomons in the Southwest Pacific under MacArthur.

Forces for all three tasks were to be drawn from the ground, air, and naval forces then under MacArthur, and from Marine air squadrons and land-based aircraft in the South Pacific, plus at least two aircraft carriers with accompanying cruisers and destroyers to support the South Pacific Amphibious Forces (which included transports, cargo ships, and the 1st Marine Divisions). Army forces from the South Pacific were to be used to garrison Tulagi and the adjacent positions, while troops from MacArthur's command would provide other necessary garrisons.

Naval task force commanders would exercise direct command of the amphibious forces throughout all three tasks. The Joint Chiefs of Staff reserved the power to withdraw U. S. Fleet units upon the completion of any phase of the operations if the aircraft carriers were jeopardized or if any emergency arose elsewhere in the Pacific.

Immediately following the agreement on the terms of the Joint Directive, Admiral King dispatched orders embodying its provisions to Nimitz. King's orders of 2 July did not actually initiate naval preparation, for both Nimitz and Ghormley had begun their preparation in June when King had contemplated making the offensive an all-Navy operation. By the end of the first week in July, Nimitz, conferring with his subordinates, was completing his plans. The Japanese were then known to be building the airstrip on Guadalcanal, and it was suggested that that island be included as one of the objectives of Task One. The long grim struggle for Guadal-

canal thus grew out of the Joint Directive of 2 July 1942, which did not specifically mention that island.

On 7 July Ghormley left his headquarters at Auckland, New Zealand, and flew to Melbourne to confer with MacArthur. They agreed on general plans for the execution of all three tasks, and accepted the obvious necessity for invading Guadalcanal as well as Tulagi. But they believed that the Marine Division might suffer such heavy casualties in Task One that it would not be able to engage in all the invasions necessary for the conclusion of Tasks Two and Three. There were not enough ships or aircraft, and the Allied invasion forces in Task One, they feared, would be exposed to air attack.

MacArthur and Ghormley, believing that the dangers inherent in launching Task One before sufficient forces were mustered to execute all three tasks in one continuous movement were too great, recommended that the invasion be postponed until the South and Southwest Pacific areas were strengthened.

The Joint Chiefs rejected this recommendation on 10 July. Although realizing that beginning Task One before sufficient forces could be assembled to continue the advance against Rabaul would constitute an operation in which the margin for error would be perilously small, they were determined to seize the initiative, halt the Japanese development of positions in the Solomons, and stop their southward advance. Guadalcanal and Tulagi were to be invaded at once. Less than one month later, elements of the reinforced 1st Marine Division landed on Guadalcanal and Tulagi to begin the first offensive in the war against Japan.

ST. LÔ BREAKTHROUGH

Lieutenant Colonel Howard P. Persons, Jr., *Coast Artillery Corps*
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Introduction

THE establishment of a beachhead, or airhead, is the necessary first phase of any invasion and much thinking and much writing has been done on the subject. But how about the all-important breakout once the foothold is gained? Invasions have died on the beachhead for lack of the power to break out and exploit. Here is an example of what may well prove to be history's best planned and best executed breakout action, *Operation Cobra*, or, as it is better known, the St. Lô breakthrough.

Events Preceding the Battle

To gain the proper perspective for *Operation Cobra*, let us examine briefly the preceding events.

Allied forces had landed in Normandy on 6 June 1944 under *Operation Plan Overlord*. The main objectives of that plan were first, to establish an adequate beachhead, and second, to break out of that beachhead and destroy German forces in western France.

The progress of allied forces in Normandy in June and early July had been slowed down by the compartmentized hedgerow fighting, and, though generally proceeding as planned in the *Overlord* studies, was behind the *Overlord* time

schedule. The need for maneuver room for the large forces built up on the Cherbourg Peninsula increased daily. It became imperative that the breakout operation take place as soon as possible and that it succeed if the entire allied operation was to be kept from bogging down.

Accordingly, the US First Army began detailed planning of *Operation Cobra*, designed to pierce the enemy line with great strength on a narrow front. This plan was based on two assumptions, first, that during early July advances would be made to the line of the Lesay-Periers-St. Lô road (Figure 1), and second, that since action by armored divisions against prepared and well organized positions in this type terrain had been generally unsuccessful, an overwhelming air and artillery preparation effectively neutralizing the penetration area would be essential to get the attack moving.

First Army Plan

The plan for *Operation Cobra* as conceived by First Army called for the main effort to be made in the center by VII Corps, commanded by Lieutenant General J. Lawton Collins.

The VIII, XIX and V Corps were to exert strong pressure against the enemy initially.

When it became imperative to break out of the Cherbourg Peninsula to keep the Normandy invasion from bogging down, Operation Cobra was planned and successfully executed to open the way to ultimate victory

Later, these corps were to increase this pressure, forcing the enemy to withdraw and exploiting every advantage gained from the inevitable disorganization caused by VII Corps' violent attack (Figure 2).

This plan was approved by the First Army Commander on 13 July and placed in the hands of the Commanding General, VII Corps for implementation. The mission assigned to VII Corps by First Army was:

1. To penetrate the enemy's defense between Marigny and St. Gilles.
2. To seize and hold the line Coutances-Marigny so as to cut off enemy forces facing VIII Corps.
3. To assist VIII Corps in the destruction of these forces.
4. To prevent enemy forces from the south and east from interfering with the operation by blocking along the line: Cerences—Tessy—St. Lô.

The Problem Facing VII Corps

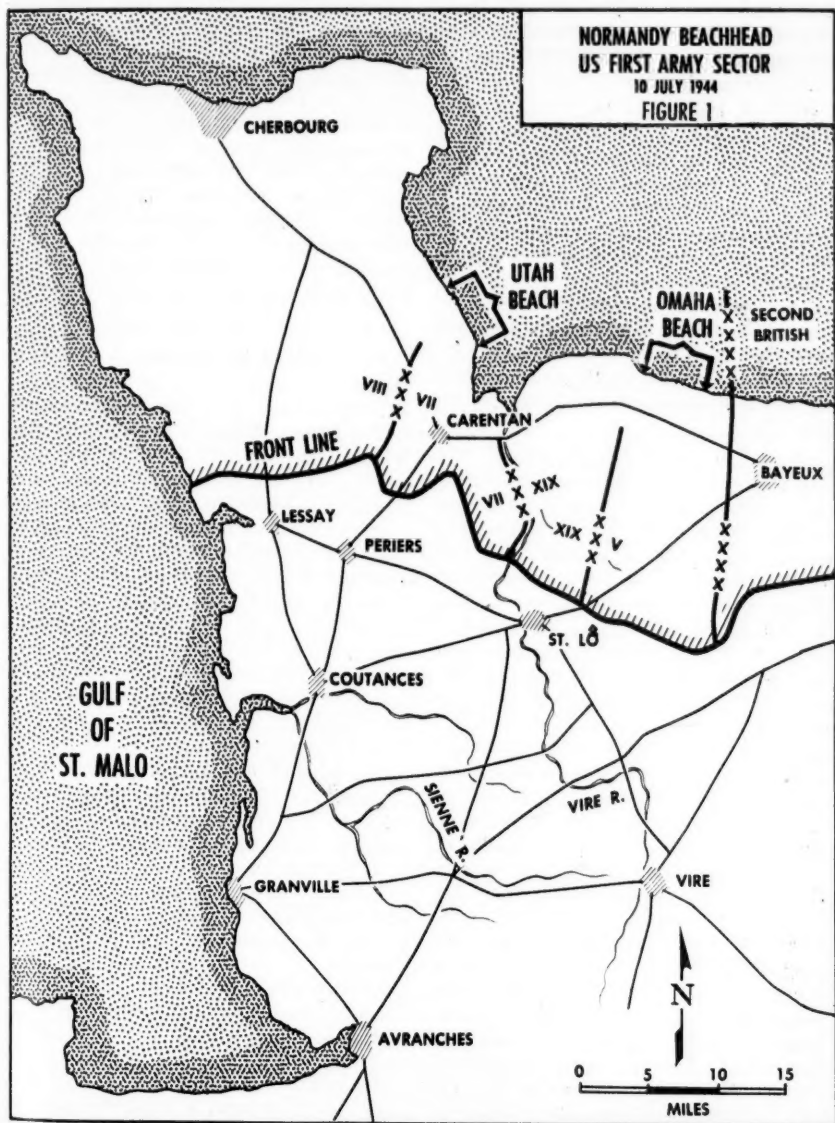
Keeping in mind the mission assigned to VII Corps by First Army, let us examine the problem faced by this corps in planning an operation of such scope and decisiveness while at the same time continuing its daily operations against the enemy. Let us examine the area involved in the operation; the strength, disposition, and capabilities of the hostile forces opposing the corps; and the means available to the corps for accomplishing its mission.

Area of Operations (Figure 3).—The area bounded roughly by Le Mesnil Vigot on the northwest, St. Lô on the northeast, Cerences on the southwest, and Pontfarcy on the southeast, was to be the scene of the St. Lô breakthrough. This area contains numerous streams of sufficient size to constitute formidable obstacles. Even greater barriers than the streams themselves, which average from twenty to one hundred feet in width, are the steep banks. The Vire River on the east is a controlling terrain feature by reason of its width. The Taute River on the west has many tributaries, such as the Lozon and

the Terrette, which divide the area between the Taute and the Vire into north-south corridors and serve to channelize seriously an advance in this area. The Sienne River and its many branches form a vantage ground for hostile defensive action due to the steepness of the valley ridges and the deep walls through which they pass. In addition to the steep banks of these numerous streams, the high ground running north from Hill 112 and the east-west ridge south of Marigny are critical terrain features. All these features and many others were given careful and detailed study in preparation of the VII Corps plan.

Opposing Forces.—The enemy's situation at the time of the commencement of *Operation Cobra* was far from favorable. Since D-day his losses of men and matériel in France had been considerable. His replacement situation was strained. March battalions, odd regiments, and battle groups continued to arrive, but always piecemeal and not in sufficient strength to affect the course of battle. There was a trickle of tank replacements, but continued losses outstripped the gains. A chronic fuel shortage and lack of proper maintenance facilities added to his already difficult transport problems. Ammunition shortages, again due to transportation difficulties plus the enormous damage inflicted to dumps by the allied air force, limited severely the extent of the enemy's artillery activity.¹¹

In addition to matériel problems facing the German Seventh Army, there was the question of morale. The officer corps still had not recovered from the turmoil caused by the attempted "Putsch" of the Field Marshals against Hitler. Though this high level crisis did not appear to have any substantial effect upon the troops, their morale, too, was suffering. Almost complete lack of air support by the *Luftwaffe*, disillusionment in the highly advertised V-weapons, plus the



overwhelming superiority of the allied forces in all arms, were the chief contributing factors to the lowered morale of the German soldier.

Although the enemy loudly proclaimed in his propaganda, in the days preceding 25 July, that he was aware of the allied intention to make an all-out attempt to smash through to the base of the Cherbourg Peninsula, he failed militarily to react to the build-up for the attack. Highly successful allied deception, together with the enemy's inherent desire to protect his V-1 sites in the Pas de Calais area, prevented him from sending sorely needed divisions from his Fifteenth Army—which had eighteen divisions—to Normandy in time.

By 25 July enemy forces opposing VII Corps—allowing for replacements and reserves—did not exceed 10,000 troops and contained elements of five divisions. Additional enemy forces to the right and left of the corps zone did not bring the total opposing force to more than 25,000.

Means Available to VII Corps.—The means available to VII Corps to overcome these opposing forces and accomplish the mission assigned to it by First Army were considerable. VII Corps, at the time planning for *Operation Cobra* was begun, had two infantry divisions, the 9th and 30th, in the line, and the 3d Armored Division, in reserve. In addition, the 1st Infantry Division (motorized) and the 2d Armored Division were made available by the initial Army plan. In the interval between preparation of the army plan and preparation of the VII Corps plan, another infantry division, the 4th, was made available because it appeared that the enemy was moving additional strength, particularly armored strength, toward the area selected for the breakthrough. Altogether, then, the VII Corps had six divisions on which to base its plans: three infantry divisions, one motorized infantry division, and two armored divisions (both of which

had twice the number of tank battalions normal to the armored division of that time). The VII Corps also had a formidable array of supporting troops, consisting in part of twenty-two field artillery battalions, eleven antiaircraft artillery battalions, four separate tank battalions, seven tank destroyer battalions, two chemical mortar battalions, eight engineer combat battalions, and many other units.¹¹ How best to utilize the means available was one of the problems facing the VII Corps in preparing its plans.

The VII Corps Plan

As visualized by VII Corps, *Operation Cobra* was to be a quick power drive through the crust of the enemy's organized positions, followed by a drive south between Marigny and St. Gilles to establish a defended corridor through which combined armored-infantry elements could pass and pivot in the vicinity of Marigny for a drive west to the sea.¹² The operation was to be divided into two phases. Phase I, initiated by an intense aerial and artillery bombardment of the penetration area, would have three infantry divisions in the attacking force. The 9th, 4th and 30th Infantry Divisions were to attack abreast in that order from west to east (Figure 4).¹³

The 9th Infantry Division was to push through and block off the right (west) flank of the breakthrough area as far south as Marigny. Successive objectives to be seized by this division, including Hill 112 north of Marigny and Marigny itself, were chosen to clear and hold open a road for passage of the 1st Infantry Division.

The 4th Infantry Division (less Combat Team 22) was to attack on a narrow front in the center, push through and secure as its objective the high ground to the south and southeast of Marigny, and thus clear and hold open a road for passage of the 3d Armored Division.

The 30th Infantry Division was to push

through and block off the left (east) flank of the breakthrough area as far south as St. Giles. Successive objectives to be seized by this division, including St. Gilles, were chosen to clear and hold open a road for passage of the 2d Armored Division.

➤ In Phase II, the exploiting forces (1st Infantry Division, 3d and 2d Armored Divisions) were to pass through the gap, or defended corridor, created by the infantry divisions (Figure 5).

➤ The 1st Infantry Division (motorized) with Combat Command B of the 3d Armored Division attached, was to drive through the breach created by the 9th Infantry Division, turn rapidly to the south-

west and cut off and assist in destroying enemy forces in front of VIII Corps. By seizing objectives along the high ground Coutances-Camprond, the 1st Infantry Di-

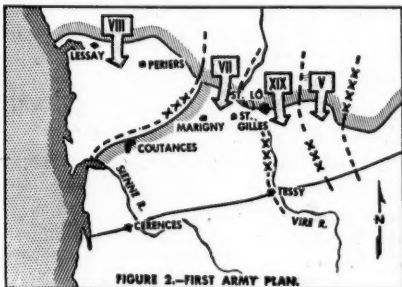
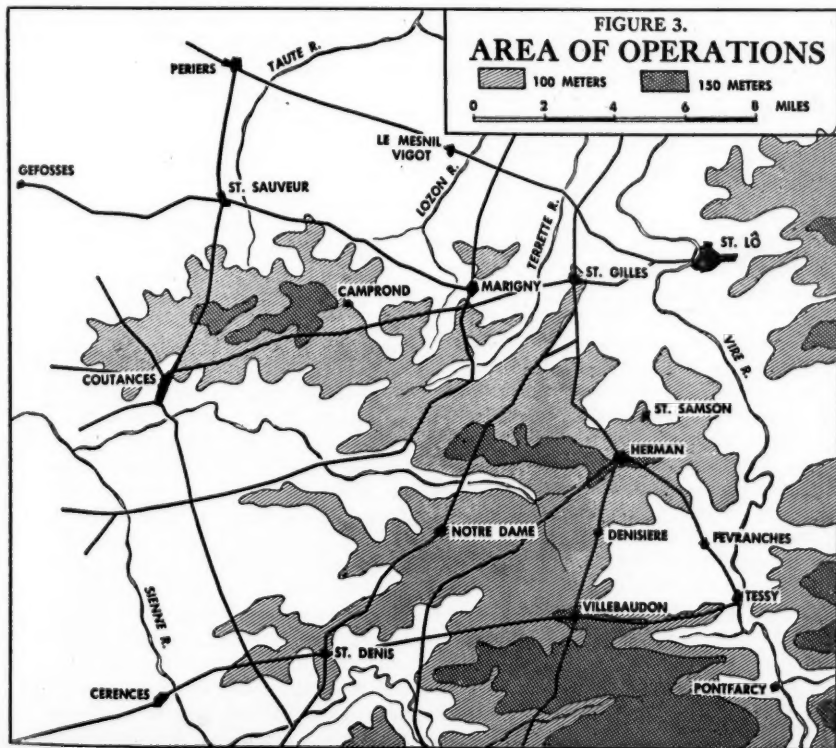


FIGURE 2.—FIRST ARMY PLAN.



vision was to form the anvil on which VIII Corps could hammer these forces to destruction.¹¹ To insure that coordination would be achieved, VIII Corps was limited to initial objectives along the line: Gefosses—St. Sauveur, and VIII Corps artillery was prohibited from firing south of east-west grid line 63. In this way units of both corps were free to take maximum advantage of the situation without fear of running headlong into each other.

The 3d Armored Division (less Combat Command B), with one infantry battalion from the 1st Infantry Division attached, was to drive through the gap cleared by the 4th Infantry Division, move rapidly to the southwest to secure the southern exits to Coutances and to protect the south flank of the 1st Infantry Division. As a key communication center, Coutances was certain to be used by the retreating Germans in escaping from the trap set by the 1st Infantry Division.¹²

The 2d Armored Division, with Combat Team 22 of the 4th Infantry Division attached, was to strike through the gap cleared by the 30th Infantry Division to seize initially the area: Herman—St. Samson in order to cover the movement of the 1st Infantry Division and the 3d Armored Division, and then was to be prepared on corps order to seize objectives between Cerences and Tessy to prevent movement north of enemy reinforcements. The objectives to be seized between Cerences and Tessy were key road centers. In effect, the 2d Armored Division was to establish super road blocks which would serve to prevent the withdrawal of bypassed enemy forces as well as to prevent the movement of effective reinforcements into the battle area.

During the passage of these exploiting forces, the two flank infantry divisions, the 9th and 30th, were to continue their attacks to hold open and widen the gap. The 9th Infantry Division was to clear its zone to an objective line, which in

this case was the boundary between the VII and VIII Corps, and the 30th Infantry Division was to seize bridges across the Vire River as far south as Val de Vire (just north of Tessy) to protect the flank against reinforcements from the east.

Enemy encountered by the exploiting forces were to be contained and bypassed until objectives had been secured. Corps engineers were assigned the task of supporting the attack by promptly clearing four roads through the Marigny—St. Gilles gap and giving maximum assistance to the exploiting forces. Each of the leading infantry divisions was charged with clearing the route of the exploiting force in its zone of all traffic and obstacles as soon as initial objectives had been seized. All exploiting forces were to remain in concealed assembly areas prepared to move through the gap on orders from the Commanding General, VII Corps, on two hours notice.

The Operation

The target date for *Operation Cobra* was originally set for 18 July but was postponed on account of bad weather. The operation was finally ordered for 24 July. But again unfavorable weather intervened and the operation was postponed until 25 July. Unfortunately the decision to postpone the operation another day was not reached until mid-morning of the 24th. By that time, due to poor communications and the fact that many bombers had to leave their British bases early in the morning in order to be over the target at H-60, it was too late to cancel the whole show. Seven hundred and twenty-eight heavy and medium bombers dropped 1,845 tons of bombs in the target area before they could be recalled. After this abortive bombing, Corps front line troops moved back to their original positions along the Periers-St. Lô road. Prior to the bombing, these units had been withdrawn, as a safety measure, 1,200 yards north of the road. This false start had

a number of results, some favorable and some unfavorable. First, it gave away the surprise which would have resulted if the operation could have taken place at the time planned; second, nervous tension caused the Germans to open up with what appeared to be the whole of their artillery, thus revealing many of the gun positions which they had undoubtedly hoped to keep concealed until a full scale attack was launched. And third, since the Germans did not withdraw from their prepared positions south of the Periers-St Lô road, under the impact of this bombardment, the corps had a good indication as to what could be expected after the bombing to take place on the 25th.

On 25 July the weather was clear and

should be noted that the bombing was being carried out in large part by the strategic air force, which is not designed or trained for this type mission, and that the technique for a saturation bombing of the front lines had not been developed at this time to the fine art which it later became. The effectiveness of the bombing was not immediately apparent, for strong resistance was met on the right, while on the left intense artillery fire was encountered. The enemy, taking advantage of his knowledge that our front line troops would withdraw just before the bombing, had pushed closely behind our troops in many places, escaping the full effect of the bombing and at the same time relaying mine fields. However, re-

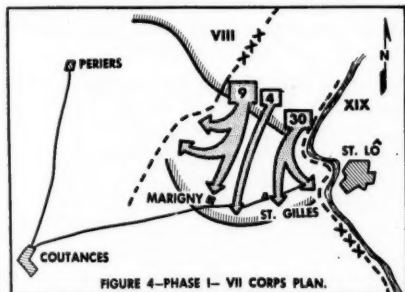


FIGURE 4—PHASE I—VII CORPS PLAN.

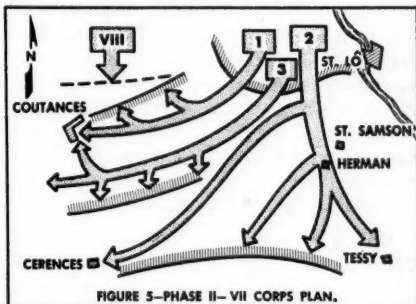


FIGURE 5—PHASE II—VII CORPS PLAN.

the operation was ordered. The front line troops again withdrew 1,200 yards to the north of the forward edge of the target area and at 0940 the bombing began. The target area was carpeted by nearly 4,000 tons of bombs from 1,500 heavy bombers, 700 tons from 350 medium bombers, and 200 tons from fifteen groups of fighter bombers.

At 1100 the infantry moved forward. However, inaccuracies in the bombing caused such severe casualties in the leading battalion of the 47th Infantry of the 9th Division, and the 120th Infantry of the 30th Division, that there was a delay of one and one-half hours in the attack by those units. In this connection, it

sistance decreased after the forward enemy positions were taken, and by the end of the day the line had moved forward almost two miles (Figure 6). Results of the air attack were also becoming more apparent. Many enemy troops were stunned and dazed. Weapons not destroyed had to be dug out of the dirt and craters, and cleaned before they could be used. Worst of all for the Germans was the fact that their communications were almost completely severed.

On 26 July the Corps Commander decided to commit the 1st Infantry Division (with Combat Command B, 3d Armored Division, attached) and the 2d Armored Division from the exploiting forces, in

order to maintain the momentum of the first day's attack, correctly assuming that the advantages to be gained from refusing the enemy any time to regroup would outweigh the advantage of waiting until all initial objectives had been captured. General Collins himself says on this point: "We had broken through the principal defenses of the Germans. I felt that the added punch of the armored divisions would be sufficient to make a clean break-away."

On the 26th, then, five divisions attacked: the 9th, 4th and 30th Divisions continued the attack, the 1st Infantry Division (with Combat Command B leading) passed through the 9th Infantry Division, and the 2d Armored Division passed through the 30th Infantry Division. Good progress was made by all divisions against stubborn resistance.¹ Marigny was captured by the 1st Infantry Division. The 2d Armored Division captured St. Gilles and was south of Canisy by night. The 4th Infantry Division captured its objective, after an advance of some four miles, and was available for mopping up operations in the vicinity and for corps reserve.

On 27 July the last of the exploiting forces were committed; the 3d Armored Division passed through the 4th Infantry Division at 0630 and began its drive west. On the 27th, enemy positions were completely overrun.² The 9th Infantry Division not only held its flank position but made some advances to the west to widen the corridor. The 2d Armored Division had continued its attack throughout the night of the 26th-27th, clearing out its initial objective at St. Samson-Herman by 0230 on the 27th. By nightfall of the 27th, the 2d Armored Division had reached Fevranches-La Denisiere-Notre Dame; the 3d Armored Division had reached Le Sault; and the 1st Infantry Division had elements at Camprond and less than two miles from Coutances, where it met stubborn resistance from the enemy attempting to hold an escape corridor for units facing

VIII Corps. It was on the 27th that the enemy finally realized the extreme danger in which he had been placed by the strong breach in his central position, and began withdrawing along the entire VIII Corps front. "

On 28 July resistance consisted mainly of strong rear guard forces left behind to protect and keep open the escape routes around Coutances for the fleeing Germans. During the day Coutances was captured by units of VIII Corps, while other VIII Corps units made contact with the 1st Infantry Division so that the converging efforts of the two corps were joined. The 2d Armored Division took Villebaudon and St. Denis. The 3d Armored Division advanced in its zone and by nightfall had forces in position to attack Montpinchon. Advance elements of the corps had reached the line indicated on Figure 6.

By noon on 28 July it appeared that a completely disorganized enemy was holding the area from the Vire River to the west, with no sign of coordinated resistance. It was time to make some rearrangements; so, effective at noon on 28 July, a new boundary was established between VIII and VII Corps by mutual agreement between Corps Commanders, and a new boundary was established between XIX Corps and VII Corps by Army order, with XIX Corps taking over Combat Command A of the 2d Armored Division and the 30th Infantry Division.

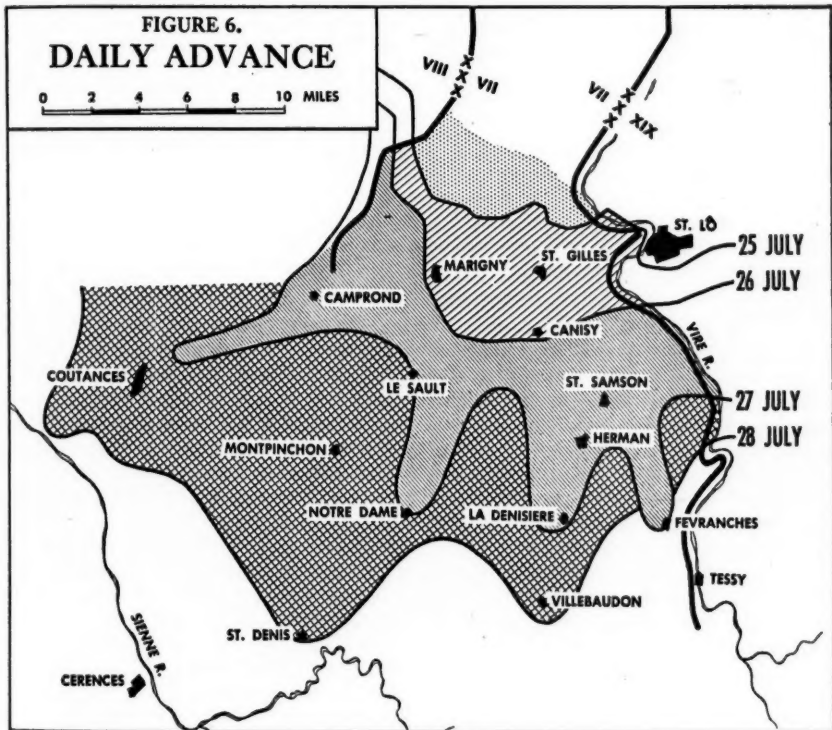
Although the major part of *Operation Cobra* had been completed on 28 July, a large enemy force trapped in the St. Denis-Coutances-Montpinchon area was not destroyed until the 29th. In the enemy's disorganized and almost frantic attempts to escape, several roads in this area had become jammed with vehicles, particularly a secondary road leading into St. Denis where vehicles of all types including guns and tanks were triple banked, bumper to bumper, in some places. With this ideal target, Thunderbolts of XIX

TAC attacked and left a string of dead and vehicular wreckage unsurpassed on the First Army front. One hundred and thirty-seven tanks and more than 500 other vehicles were destroyed. Added to those losses were those caused by armored units and artillery fire.

So ended *Operation Cobra*. The enemy's front opposite First Army had been penetrated to a depth of some eighteen miles

of air power to bomb targets within range of supporting artillery, in some cases, as demonstrated by this operation, a requirement exists for air support against targets within artillery range. The nature of the objective, then, and not the ability of the artillery to reach it, should determine whether air support is to be utilized.

To secure best results from this type



on a twenty mile front. In the coastal sector the enemy could do little to halt the advance. It was time for new orders to be issued by First Army and VII Corps.

Lessons Learned

Although normally it is a wasteful use

of saturation air bombardment, such bombardment should take place close to the attacking troops in order that defensive positions can be reached before the defenders have had an opportunity to recover and man their positions. Distances of 1,000 yards should be satisfactory,

but even then it will be found necessary to cover the target with artillery fire during the interval between the lifting of the air bombardment and the arrival of the infantry on the defended position.

A great deal was learned in this operation about the possibilities of the tank-air team. Four fighter-bombers armed with fragmentation and 500-pound bombs were used to fly continuously ahead of each advancing armored column. Using the planes as their eyes to give advance warning of impending threats and detailed information on the enemy's disposition, the armored columns were able to advance more boldly and aggressively. In addition, the planes were available as a weapon to attack targets appearing in the operating sector of the tank column. When necessary, additional planes could be requested by the flight leader direct to air operations. This system produced results far beyond all expectations, and should be standard for all fast-moving situations.

In this operation our doctrine that armor is best used in the enemy rear was well demonstrated. Prior to this operation, blitz action by tanks in compartmentized terrain against well prepared and organized positions was generally unsuccessful. However, once the enemy had been disorganized by the heavy preparatory air and artillery bombardment, and infantry had penetrated his positions on a scale which prevented any closing of the gap, armor came into its own as an exploiting force without equal.

Flexibility in organization was demonstrated when the XIX Corps boundary was moved to the west to include the zone of action of the 30th Infantry Division and Combat Command A of the 2d Armored Division. These units were able to pass to control of XIX Corps from VII Corps without hindering the battle which was in full swing. Flexibility in organization was also demonstrated by the smoothness with which the armor-infantry elements of the

exploiting forces worked together. It should be remembered that the 1st Infantry Division had Combat Command B of the 3d Armored Division attached; the 3d Armored Division had a battalion combat team from the 1st Infantry Division attached; and the 2d Armored Division had Combat Team 22 from the 4th Infantry Division attached. Instead of creating confusion, these combinations worked very well indeed. Any army whose units are so trained as to permit such flexibility in organization for combat has achieved a tremendous advantage.

Flexibility in planning, as well as flexibility in organization, was demonstrated. As originally planned, VII Corps was to drive to the sea just south of Coutances. Unexpected progress made by VIII Corps on its front rendered unnecessary a drive to the sea by VII Corps. A new boundary was established between the corps, and the direction of attack of VII Corps was changed from west to south.

This change in the direction of the attack from west to south was made possible not only because of flexibility in planning the operation, but because of the stress laid by VII Corps on traffic circulation and control. Referring to arrangements made for traffic circulation and control, General Collins said: "I stressed these arrangements because my experience indicated that we could take advantage of our great truck and mechanized equipment only if it could roll promptly and with speed at all times. Part of the success of VII Corps in making rapid advances was unquestionably due to the attention of the entire staff and all commanders to the problems of circulation and traffic control."

A lot can be learned from the efficient way in which a corps reserve was maintained. At the start of the operation the exploiting forces were available as reserve. After the 1st Infantry Division and 2d Armored Division were committed on the 26th, the 3d Armored Division was available as a reserve. By the time the

3d Armored Division was committed on the 27th, the 4th Infantry Division had taken its objective and was available for corps reserve.

To add to the lessons already mentioned, the following answers by General Collins to questions submitted to him concerning this operation are of interest:

Question: Do you feel that a corps with reasonable aid can properly handle six divisions when the distances involved are not excessive?

Answer: "I feel that a good corps headquarters can properly handle five or more divisions without great difficulty. You may be interested to know that during the defensive battle in the vicinity of Mortain, following *Cobra*, I had seven divisions, less one combat command of the 2d Armored, in the VII Corps. During this operation we were covering a front of about forty miles with very heavy operations of fifteen miles of this front. During this period I had the 1st, 4th, 9th, 30th, and 35th Infantry Divisions, the 2d Armored Division less one combat command, and the entire 3d Armored Division. You will note also that the 2d and 3d were the two large armored divisions, almost double the strength of the standard armored division."

Question: Were you or your staff required to concern yourself with supply to a greater extent than contemplated by our doctrine, either during the operation or in planning it?

Answer: "In general, I would say 'no' to this question. We got excellent support from the First Army throughout our operations and our supply people usually had to concern themselves with the supply of corps troops. Because of the size of our corps troops, which at times exceeded 50,000, this was no mean task. However,

I was extremely fortunate in having a G-4 who did a magnificent job throughout our operations. I was equally blessed with exceptionally able staff officers. At no time did I personally have to intervene in the supply situation until we broke into Germany, when the distance from the ports made it necessary to organize special truck companies to haul ammunition."

Conclusions

In conclusion, *Operation Cobra* was a well planned and successfully executed attack by combined air and ground forces. The temporary advantage gained by saturation bombardment of the enemy's prepared positions from the air was properly exploited by a sustained ground effort which destroyed the German left flank, and, with subsequent operations, caused a withdrawal of their main forces across the Seine, and prevented recovery until the Allied Armies had reached their supply limit near the German and Belgian borders.

Although it is still too soon to fully evaluate the critical importance of this operation, it may well be listed among the decisive battles of the world. If the allies had failed at St. Lô, the extent of the disaster would have been tremendous. There was still a German army in reserve in the Pas de Calais area. If the First Army had been defeated at St. Lô, following the German defensive victory at Caen, that army undoubtedly would have moved to strike the bridgehead. Although the allies would have been able to pour more troops ashore, they would not have been able to supply them properly, nor would they have had the area in which to maneuver them. The allies would have lost the initiative. However, *Operation Cobra* succeeded, thus opening the door to ultimate victory.

LETTER FROM NANKING

Captain Ray Huang, *Chinese Army*

Captain Huang graduated from the Command and General Staff College in July 1917. He served as a platoon commander in Burma, was wounded in Myitkyina, and in 1946 saw action in Manchuria against the Chinese Communists in the first battle of Sze-ping-Kai, Changchun. His letter is dated at Nanking, 20 June 1948.—The Editor.

MY Captain's pay has been raised to Chinese \$13,000,000 per month, which sounds ample. But as a matter of fact it is precisely the opposite. My monthly income, inches thick in Central Bank Notes, does not even suffice to buy a pair of decent shoes.*

I am a bachelor and have no family burden, yet I find it extremely hard to keep my head above water. How can the married fellows make it? No doubt they have a truly miserable life.

The other day I called at the home of a Lieutenant Colonel. This officer, educated in Hongkong and the United States, is an outstanding soldier. He speaks and writes two or three foreign languages, and during the late war against the Japanese commanded a regiment of guerrillas in the Yangtze Delta with brilliance. Meeting him the first time, I was deeply impressed with his amiable disposition and organizing ability. Later, official duties caused

me to report to him occasionally and my admiration for him increased. He is an outstanding leader, and very talented.

I had been informed that his home was very humble. But that afternoon, to my surprise, I found myself in front of a not-too-bad brick house. As there was no bell, I knocked on the door. My senior officer appeared, opened the door, and ushered me in. What a house! That western style building, built to accommodate three or four persons, was actually occupied by five families! My Colonel has four children and his entire family lives in one room sixteen by twenty feet. Their room was dark, dingy and badly ventilated. He let me sit on one of his two chairs while he himself perched on the bed as we talked. In a minute or two his wife stepped in; quite an attractive lady, but, like her husband, miscast for life in such rough surroundings. I stood up and the Colonel introduced me. The lady did not stay long, but apologized as she hastily flapped back the bed cover on which her husband was sitting, picked up a can of grease from under the bed, and quickly made her way out. Her excuse: the cooking must be hurried before other housewives in the same building should monopolize the kitchen!

It is disgraceful that the brains of our armed services must live under such miserable conditions. This is what is referred to as the tranquil life in the peaceful rear areas, but the prospects of the

* This was prior to further inflation of the Chinese currency, and the subsequent establishment of the new gold Yuan.

combat zone, of course, are even more distressing.

In the days when we were fighting the Japanese, it was always a shock when we heard that a certain division commander was killed in action. And we would consider it an overwhelming loss when an entire regiment was routed by the enemy. But now, with the Communists as our opponents, our casualty lists carry even the names of Corps and Army Commanders, and many a seasoned brigade has been reported wiped out after a Red attack! News of this sort appears in the papers every day and is so common as to cause little comment. But we who are more or less involved in the scene just can not dismiss the significance of the long casualty lists. After hearing of this or that brother officer killed or taken prisoner, ourselves con-

planes commanded the air, as they still do. The fertile provinces south of the Yangtze were untouched by the Communists. We enjoyed the superiority of numbers, our crack divisions were making progress in Manchuria, and the equipment of our troops, though inadequate, at that time was still much better than that of the Reds. Two years ago a great many people, including some of our general officers, overestimating the advantage of these favorable conditions, came up with the conclusion that victory would be easy for us and that the war against the Communists could be ended in a few short months.

The big blunder in this estimate of the situation was that too much stress had been laid on the value of material superiority while many other important

"We can still forge ahead to victory," this captain of the Chinese Army declares, despite the deficiencies and disillusionment that have come from the long and bitter struggle against the Communist forces

stantly oppressed by the ever heavier burden of the cost of living, we begin to ask ourselves: Can we win out?

I am afraid that many of our foreign friends believe the answer is in the negative. Last year I read an article released by an American syndicate in which the author asserted that the situation in China was incurable. Many columnists and feature writers predicted that we might lose the North in a few months and the rest of China soon after. Their predictions were not entirely groundless. They pointed out that two years ago we seemed to have every advantage over the Communists, yet we did not win the war. Now at a stage when the odds are reversed, how can we win? Their deductions are quite plausible but perhaps a little too hastily arrived at.

It is true that early in 1946 the situation was more advantageous to us. Our

factors were entirely disregarded. Those optimists did not realize that the Communist is a professional agitator and a skillful organizer, and, therefore, a very dangerous enemy. They did not visualize the gains the Reds had grasped while "peace negotiations" were in process, and our observers failed to foresee the possibility that international relations might turn to our disadvantage.

In the spring of 1947 we were still hopeful of driving the enemy northward. It was only in the summer that we discovered that such strategy would not work. The Communists refused to maintain contact with our forces but, instead, let the fighting sprout up here and there like mushrooms.

There were, and still are, sound reasons for our enemies' methods. Their armies are built up on the farms. Without brothering themselves about laws they have been

able to develop a system of drafting as many conscripts as they require. They feed their troops in private kitchens. They are prepared to take any town at little cost and are ready to evacuate it at any convenient time if it becomes apparent that to hold it they must pay off. They are quite carefree and their strategy is destructive. They do not worry if the national economy is paralyzed. While our Supreme Headquarters finds it a terrific task to maintain a payroll of millions of soldiers, the Red military strength is no burden to them at all. The sky is the limit!

Even more acute are the psychological factors involved. Remember that this civil war crowded on the heels of eight years of desperate fighting with the Japanese, in which we suffered much death and destruction. Consequently, many people just cannot stand gunfire and air bombing any longer. After the disillusionment of VJ-day and the peace negotiations, our people are very much depressed and their negative attitude toward our present exertion is not surprising. And the Communist is a well-trained propagandist, knowing how to work on the public mind, especially the mind of a frustrated people who are demanding a change, who are ready to accept any black hope, and who are inclined to turn against what they fancy to be the cause of their protracted agonies. So far the Communist has been very successful in stirring up the general war-weary feelings of our good citizens, whose loyalty and support is of vital importance to us.

In the long eight years we were engaged with the Japanese, the counsel of our beloved ones was: "Do your duty and take care of yourself." What a change it is today, and how much our morale is sapped, when these same voices say: "Why must you be such fools! Is it a cause worth fighting for?" It is far easier for

people to visualize the danger of a foreign invader's bayonets than the sinister danger of the Communists' sugar-coated propaganda.

Furthermore, 80 per cent of our population is illiterate, while a majority of our people are all but starving. To simple, uneducated, hungry people, food is of far more concern than any political conceptions. It is indeed difficult to teach them the difference between Communism and Democracy when their stomachs are empty. Now the Communists lead them to an open revolt, luring them with the myth of "land reform." Their propaganda is: "The corn cake is almost on the tip of your tongue; don't let Chiang's troops take it away!" It is as effective as it is astute. Meanwhile, there are only abstract nouns to counter this psychological warfare. It is much easier for me to cobble my shoes four times before they go to pieces, and for my Colonel to keep his family in a hovel, than for Private Chang Teh-sheng to understand why we must battle Mao Tze-tung while his family is left behind with scarcely enough to eat, year after year.

Today the Communists are rampant, and we suffer. But the war situation has entered a new phase in that there are always slight turns, minor changes, gradual developments, which eventually are certain to affect the course of our campaign. First of all, our people are beginning to comprehend that the suppression of Communism is a hard, tough job and will take time. Nobody any longer clings to the vain hope of an early victory. Our generals are deploying their troops more warily, realizing at last that to combat the Reds is not necessarily easier than to oppose the Japanese, but in many respects it is much tougher. The suicidal doctrine of defending every position at any cost has been abandoned. More freedom in operations now enables our field commanders to gain the initiative. Certain

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field armies have been performing impressively since the adoption of the new tactics.

Two years ago only a few of our people understood that, in addition to successful military operations, political, economical and psychological warfare are also necessary to guarantee victory. Now, although much time has been lost, and though I

the Communists, our government was negligent in not seeking the support of the masses of the population. The Communists did not neglect this opportunity, and consequently many Pacification Corps troops and militia (civilian components) were absorbed into the Red camp. However, our Supreme Headquarters has now gone into action in this matter, and a very



cannot say we are making much headway yet in these fields, at least, I am safe in stating that the existence and importance of psychological and economic warfare is clearly recognized. Not long ago such subjects as "land redistribution" and "liquidation of the official capital" were only discussed by "extremists"; today these topics have become very popular and are even debated in government-owned newspapers. And that is a big change.

In the early stages of our war against

large People's Safe Defense Program has been inaugurated. In recent battles this has proved to be of great value to us, for the fabulous mobility of Communist armies is built upon their practice of conscripting replacements on the march, using all farm villages as their supply points, every country hearth as their field kitchen. We believe that before long these methods will no longer be available to the Reds and then they will lose their mobility and recuperative ability in the field.

We have always believed heretofore that time was on the side of the Communists; but now we find that this is only half true. A reckless gambler, making use of his neighbor's money as if it were his own, might win a fortune at a single toss, but if he sticks to the gaming table too long he is certain to ruin his neighbors. That is exactly the case of the Communists who, in the "hide and seek" operations in Shantung and Honan provinces, constantly moving their divisions back and forth, have eventually exhausted an immense area. A barren, denuded battlefield may bring this nation another step closer to economic collapse, but it also denies the boundless supply of personnel and food for the Communist army. Under such circumstances the Communists, unable longer to effect shock tactics, are bound to lose the campaign. This fact explains why recently they are so anxious to cross the Yangtze or march west to Szechuan—they now want to leave the land made barren by their own tactics.

Thus we should understand that while our situation is serious, that of our adversaries, the Communists, is by no means easier. Their problems may be of a different nature than ours, but they are by no means less oppressive. Except in Manchuria, the Reds do not have a single railway in operational condition. Their signal, medical and ordnance supply situation has never been satisfactory. Their nomadic life is not attractive to skilled specialists, whom they need so badly. Their prestige reached its zenith when their campaign symbolized some hope for the people, but I doubt whether they can maintain their prestige much longer, considering that after years have elapsed the people are still suffering, kinsfolk are being killed and dwellings burnt, and there are few signs of their materializing.

To be sure, the Red Political Commissars are as tough and crafty as ever, the morale of the Communist army can be

promoted by well-arranged easy victories and cheered by the "land reform" propaganda. But their casualty rates increase, and when the Red soldier begins to realize he is enmeshed in an endless career of blood and ashes, dynamited bridges and detracked railways, but nothing else, and he finally tires of it, even the most eloquent and talented morale builders will find the damage beyond repair.

Naturally, all these tendencies must not be exaggerated. There are now signs of a change, but these signs are not yet the change itself. We are in no position to underestimate the enemy; we did that two years ago and are still suffering for it. Any further indiscretion, such as failure to watch every line of action our opponents might take, would result in even greater catastrophe for us.

Tonight I write this article as our Manchuria forces are crowded into three cities, all the rest of that part of the world still being under Red control. Should those last ramparts fall—well, it would mean at least half a million fresh troops the enemy would immediately be able to march down into North China; after a few more weeks, it might be another million. We are aware of this, just as we understand that our economic position is not promising. A major flood again might wash out all our hopes.

But why not think positively? Today our weakness is revealed rather than covered up; our mistakes are openly criticized rather than unchecked. Psychologically we are sounder, saner, more fit to challenge the realities of life. Though our isolated cities are pressed by the hostile encirclement, if we can but hold them they are ideal airheads, deep in enemy territory, for the seizing of which we should have required a dozen well trained airborne divisions! There is plenty of opportunity for victory ahead for us—we should be both craven and foolish to give up at this point.

Foreign observers visiting China often comment upon the fact that we lack efficient leadership. This does not mean, however, that we are starved for capable generals. Another point is that on many occasions the problems of our armed forces are such that they are beyond the capabilities of a brilliant soldier to solve. Along with fighting the Communists, our commanding officers are also required to combat traditions, intrigues and many other factors. Experience has proved to us that purely military problems are the least disconcerting of all the harassing "head-aches" which confront a Chinese commander. What "bazookas" our infantry possess are ancient relics. Our water-cooled machine guns are antiquated. And yet we must remember that in many aspects the social system and living conditions of this country are still in the age of muzzle-loading rifles! That is why we must always compromise with the outside world, suffer our policies and procedures to be hampered, and hardly ever achieve anything four-square and efficient.

In short, things in China cannot be gauged by Western industrial standards. I myself, an ex-engineering student, often feel thwarted when against my better judgment I must write something impracticable in my staff work, while logical recommendations based on analysis and computations are thrown into the wastepaper basket. Too many factors existing in this agricultural society limit the full use of scientific methods.

Things are bad, but it is not the end of our hopes. Despite all the deficiencies, we can still forge ahead to victory. Many of our officers now believe that we should develop a large air force. As regaining initiative on the battlefield is of the keenest interest to us, the value of air power becomes apparent to all. Air squadrons, which are least subject to interference by our present chaotic conditions, offer the best hope for early and economical victory.

Fighters and dive bombers are the best weapons to cope with the Communist troops; cargo planes will satisfy all our strategic requirements.

As for the reorganization and retraining of our ground units, many observers suggest Formosa as the ideal location. A sizable retraining program could be conducted on the island with our schools and training fields quite secluded and safe from outside influence or interference. A certain amount of shipping would be needed to implement such a plan, but, on the other hand, maritime transportation would ensure safer and swifter troop movements than are now possible over our disorganized rail and highway net. The advantages of such a reliable means of transportation should not be ignored.

We now are receiving some war supplies from the United States. Suppose we unload them at Tsingtao, or any other port, meanwhile also landing our retrained divisions there. Sufficient rehabilitation material could also be imported and workable social and economic reform programs initiated under trained political organizers. Then a firm offensive and steady push inland could be undertaken. Such a program and movement would be more effective and fruitful than trying elsewhere and having our strength scattered. To insure its success, this "bridgehead reform" would have to be planned, organized and coordinated as completely and thoroughly as an invasion of any hostile shore.

We do not consider that this would be an easy job. It is only feasible on the condition that we can slow down inflation and hold the Yangtze and certain other major fronts. But I do not want to go too far into the details here. I do not mean to make a five-star decision at this point, but I do want to set it straight that there are still numerous ways for us to improve the efficiency of our war effort.

It would be absurd as well as unfair to interpret any mistakes we have made heretofore as evidence that our position is now hopeless.

Next fall I shall have been in the Chinese Army for ten years. In these years we have experienced success and adversity. Now we see many friends who narrowly escaped Japanese artillery and air bombardments fall before Communist machine guns, our country once again on the brink of an abyss, more dangerous than ever before. This, truly, is a national tragedy! In the meantime, with marriages delayed, chances for further education gone, the gay spirit and enthusiasm of youth passed, and fond dreams and extravagant ideas vanished into the vapor of those long hard years, we now find ourselves engaged in a struggle to which our young brothers and sisters refer as "that dirty business"!

Although it may be a dirty job, national repairs and rehabilitation must be effected. Civil war is always a bitter, cruel struggle, but when you remember that the Chinese Communists consider that the

privileges of their international gangsters should supersede our own national interests, we can hardly consider them still as our fellow countrymen. We have 450 million people in this country who must be fed, while every effort must be made to keep them free. In this Twentieth Century, freedom of thinking is as essential as freedom from want. In other words, the four freedoms minus one do not make up freedom at all.

When I came into the service in 1938 I did not dream that I would stay so long in uniform. Now, however, I realize that our work can never be complete so long as one of our primary surviving rights is still threatened, whether by Japanese militarists or by Chinese totalitarians.

Can we win final victory? That depends on how fast we think, how fast we can organize, and how fast we can perform. As my Colonel and I concluded the other day, while talking in his dark, dingy house, it is up to us. But we want our friends overseas to understand our problems, and we badly need your sympathy and continued friendship and support.

The road to genuine security is to work for peace, applying ourselves fully in the effort, using all the resources of our minds and skills and talents, exercising the maximum of patience in negotiation without the least compromise of principle. But it is a long-term program. Conflicting ideologies and traditional attitudes, developed over centuries, cannot be reconciled within a few short years. In the meantime it is vital to our security interests that, healthy and strong ourselves, we restore the strength of those who, clinging with us to the principles of human rights and peaceful settlement of disputes, will unstintingly cooperate in defense of those principles.

General of the Army Dwight D. Eisenhower

Flow and Consumption of Supplies

Lieutenant Colonel Harry R. Page, *United States Air Force*
and

Lieutenant Colonel Lawrence J. Fuller, *Corps of Engineers*
Former Instructors, Command and General Staff College

A NEED has long been felt by logisticians for a graphic representation of the flow and consumption of supplies. Such a picture has been developed by the authors for use at the Command and General Staff College.

A series of six charts, one of them introductory in nature, and the other five showing the flow and consumption of supply by classes, has been prepared and is presented in this article. It is based on a study of worldwide supply experience in World War II, utilizing reports from many activities and theaters, modified and adjusted for postwar developments. Therefore, they present average generalized supply figures rather than figures applicable to any one theater, or any one type of combat operation. The graphs are concerned with only the daily expenditure of supplies. They do not show initial supply, and they show only indirectly the development of supply levels.

The unit of measure employed, short tons per theater "division slice," is considered appropriate for long-range planning for supply of the Army and the Air Force in a theater of operations. The theater division slice is defined as including "the strength of an average division plus proportionate shares of the total corps,

army, communications zone, and theater overhead units."

Chart A illustrates the troop location and strength ratio which has been assumed in connection with the division slice. We have illustrated this ratio by the human figures shown on Chart A. Each figure represents 10,000 of the 40,000 men making up the division slice. For illustrative purposes in these charts, it has been assumed that all the divisions in the theater are occupying sectors on the front. In practice, of course, varying proportions of these troops will be in reserve, in rest areas, in transit, or staging. Also shown, in a fashion similar to that used for the division slice, is the proportionate air strength in the theater based on the ratio of two air "wing slices" per division slice. The wing slice is defined, in a manner similar to the division slice, as being the strength of an average combat wing plus proportionate shares of air service troops, army communications zone troops, and theater overhead troops in support of air units.

In addition to showing the supplies consumed by the Army in a theater, the chart also shows quantities of supplies brought into the theater for the use of the Air Force. However, all is shown in terms of

Six charts developed at the Command and General Staff College show graphically the flow and consumption of military supplies, and will aid in planning for Army and Air units in a theater of operations

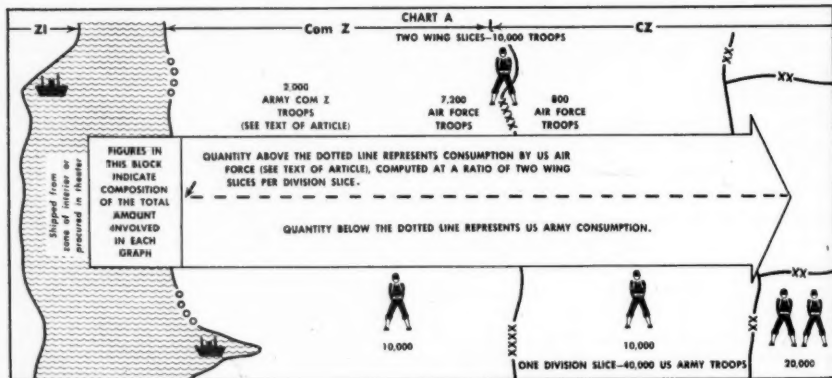
tons-per-division slice per-day, the unit of measure we have adopted. In all instances, figures on Air Force strength include those Army troops referred to above as part of the wing slice, which are required within the theater because of the presence of Air Force elements requiring Army administrative or logistical support. To separate the quantity of supplies brought in to the theater for the Army from those supplies brought in for the Air Force, a horizontal dotted line has been drawn through the quantitative arrow on each of the charts.

The flow of supply, in terms of tons-

can easily be determined by making a calculable increase in the amounts shown. For example, if it is desired to establish a theater reserve of thirty days of supply and accomplish this build-up in 120 days, a fractional increase of $30/120$ or $\frac{1}{4}$ is made in the amount indicated as required for each day.

In examining the six charts individually, the following observations might be made:

Chart A. Notice at the far left the Zone of Interior with its port of embarkation. Proceeding across the page to the right, follow the development of the com-



per-division slice per-day, as shown on each of the charts, is supported by pounds-per-man per-day data displayed beneath each graph. These pounds-per-man per-day figures, again, are world-wide averages of experience factors modified by postwar developments.

Procurement in the theater is indicated in each graph as being a probable source of supply. Supplies thus available would decrease proportionately the amount to be secured from the zone of interior.

Build-up of theater levels is not included in this series of graphs. However, quantities necessary to attain such levels

munications zone, and the combat zone, including the army and corps rear area and several division areas. Notice the placement within the various zones of the small human figures representing the distribution of the air wing slices and the division slices at the ratio of two wing slices per one division slice. This was the over-all average ratio found throughout the various Theaters of Operations in World War II. The 20,000 men shown in each division area include not only the strength of the basic division but also the additional combat and service troops present there. The large horizontal arrow

CHART B.—SHORT TONS PER DIVISION SLICE PER DAY—ALL CLASSES

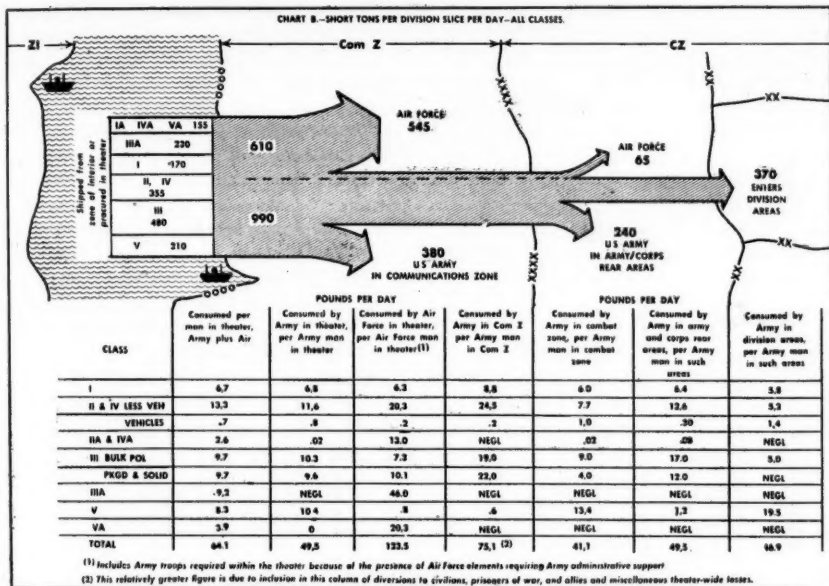
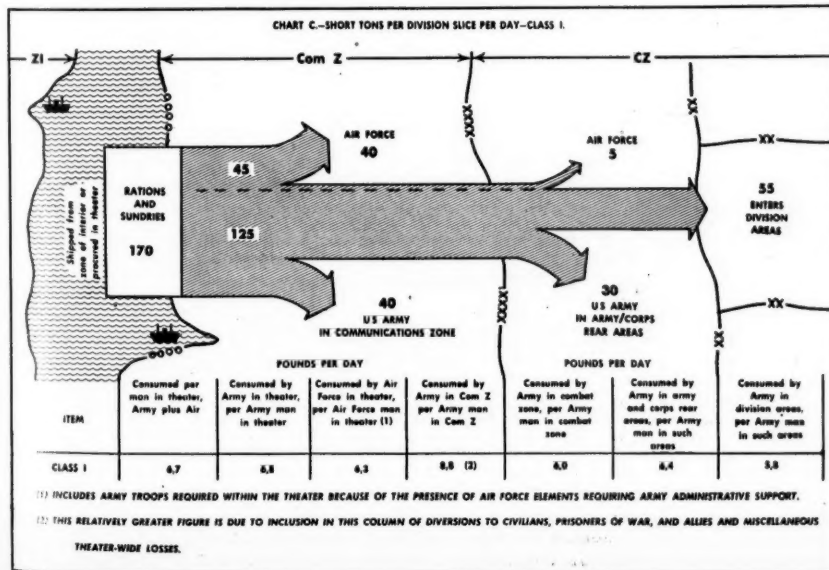
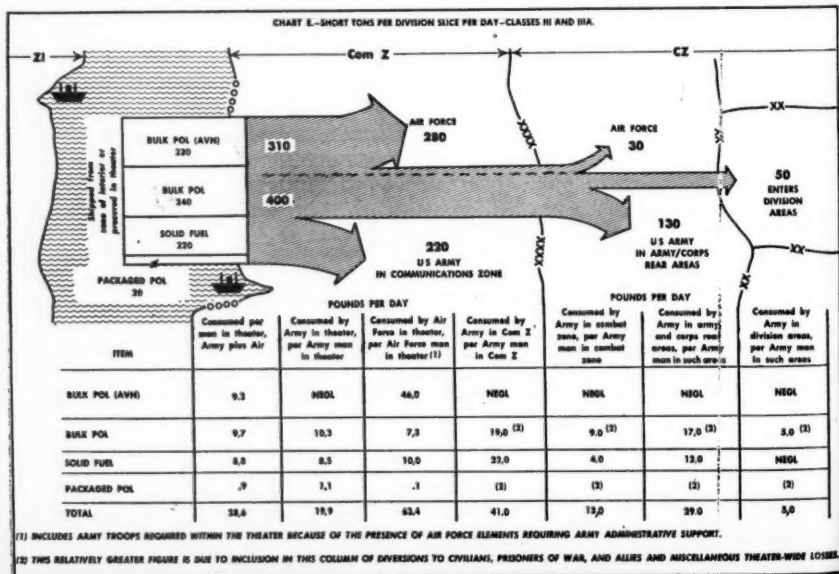
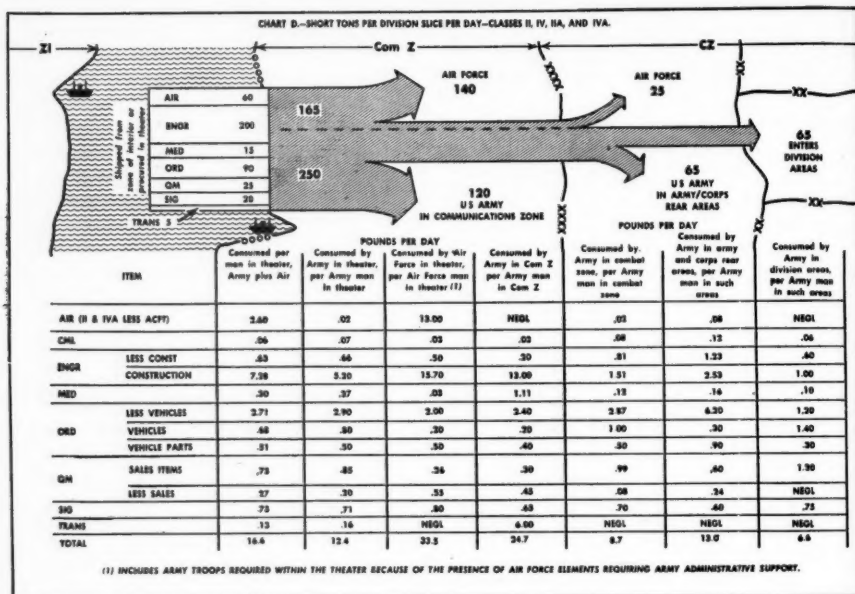


CHART C.—SHORT TONS PER DIVISION SLICE PER DAY—CLASS I

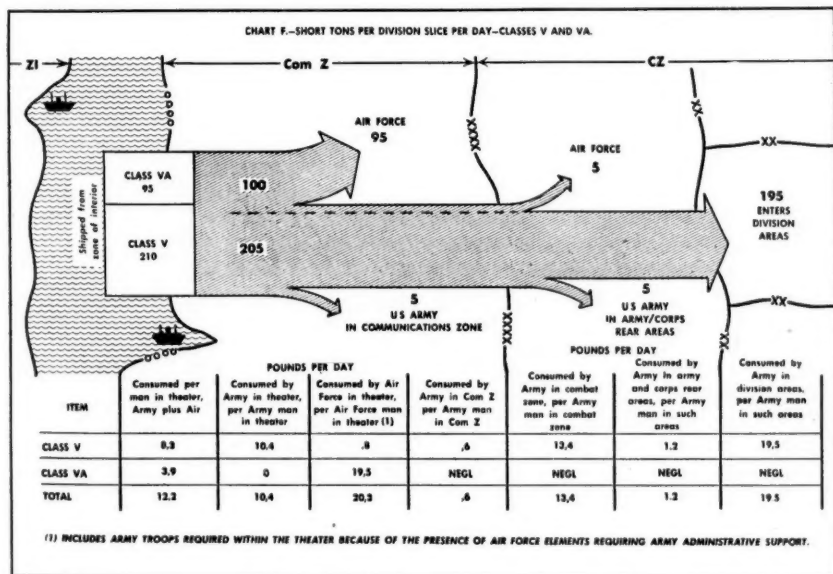




which occupies the central position on the chart represents the quantity of supplies shipped from the zone of interior and/or procured in the theater. The block at the base of the arrow in all charts is subdivided to show composition of the total amount involved in each case. Notice also the horizontal dotted line, previously referred to, used to separate the supplies consumed by the Army from those consumed by the Air Force.

Chart B shows the short tons expended

The termini of the various branch arrows indicate the locations within the theater at which the various tonnages are consumed. The supporting data in terms of pounds-per-man per-day shown across the bottom of the graph provide figures applicable to the various troop strengths being supported. These pound-per-man per-day figures are keyed directly to the tonnage figures above. They also have, of course, a balanced mathematical relationship among themselves. Notice, as explain-



per-division slice per-day, total of all classes. Notice, as mentioned above, the subdivision of the base of the arrow to show the various components of the tonnage indicated, Classes IIA, IVA and VA, Class IIIA, Class I, and Class II and Class IV, Class III and Class V. Notice that Air Force items of supply, the "A" classes, are shown at the top of the arrow as is the Air Force consumption. This is done consistently throughout the charts.

ed in footnote (2), that quantities of supplies diverted to civilians, prisoners of war, allies, and miscellaneous theater-wide losses are shown in the column headed, "Consumed by Army in Communications Zone per Army man in Communications Zone." This inclusion is considered appropriate inasmuch as such diversions on a large scale are generally made within Communications Zone boundaries.

Chart C is the simplest of the charts

as it shows only one item of supply—rations and sundries. Notice again that the quantities of supplies diverted to civilians, prisoners of war, etc., is charged to Army troops in the Communications Zone, giving the impression that their ration consumption is high, which is not necessarily true. In considering the supply of rations, especially when supply is represented by tonnage or poundage figures, it should be remembered that most of the variation in weight is due to the variety of means of packaging rather than to differences in actual net quantity of food.

Chart D illustrates flow and consumption of Classes II and IV, and IIA and IVA; items of organizational and individual equipment, replacement parts, construction items, sales items, and the great variety of other items normally comprising these classes. Notice the separation of vehicles under Ordnance; and construction materials under Engineers. This is done to facilitate the planning for shipment and storage of these more cumbersome articles.

Chart E applies to Classes III and IIIA, with the necessary further breakdown into bulk and packaged quantities. This further segregation was not entirely practicable due to the variety of distribution employed within the theater.

Chart F shows the short tons-per-division slice per-day of Classes V and VA. This is the only chart in which no men-

tion is made of procurement in the theater, it being normal to supply all ammunition by shipment from the zone of interior. The negligible quantity of Class VA shown as consumed in the combat zone represents the aircraft bombs and machine gun and cannon rounds expended by the few tactical air units actually stationed in the army rear area.

The application of the material shown in this series of graphs is thought to be quite broad. Not only can it be used in developing rough requirements for supply of all classes to a theater of operations, but it can also be used for planning cargo transportation, construction of storage and distribution facilities, employment of service troop units, and other similar logistical considerations. Again it must be emphasized that the figures shown here are broad over-all averages for all theaters and for all types of operations. No attempt should be made to apply these figures at the exact value given to a particular operation or particular theater. It is possible and advisable, however, to modify the figures here shown in the light of personal experience and the nature of the operation contemplated, and thereby be aided in planning for the flow and consumption of supplies.

A subsequent article will expand the concept of the division and air wing slices and give more detailed figures on their composition.

Supply is basic in war, and must be considered before possibilities of strategy or tactics which are dependent on it. It is the limiting factor to everything.

Major General C. H. Boucher, Great Britain

Establishment of the Fundamental Bases of Strategy

Dr. James Lea Cate, *University of Chicago*

This is the second of two articles which comprise Chapter 7 of Volume I, The Army Air Forces in World War II, edited by Wesley Frank Craven and James Lea Cate; printed by permission of the University of Chicago press, Copyright, 1948.—The Editor.

Permanent Machinery for Military Control

ON 1 January 1942, twenty-six nations through representatives assembled in Washington pledged their mutual cooperation against the Tripartite powers to the extent of their respective military and economic resources. In manpower and industrial capacity, if not in current military strength, the United Nations were vastly superior to the Axis powers. But whatever public statements might be made about common ideals, the twenty-six members of the new organization had separate national interests, sometimes widely divergent or even conflicting; material advantages might easily be dissipated by the lack of unity usually inherent in a military coalition.

In his address to the Congress on 6 January, President Roosevelt promised that "we shall not fight isolated wars—each nation going its own way." He referred to measures already taken to in-

sure cohesive efforts—current military discussions and the unified command in the Southwest Pacific—and said: "There will be a continuation of conferences and consultations among military staffs, so that the plans and operations of each will fit into a general strategy designed to crush the enemy."

The vast amount of important business accomplished at ARCADIA gave evidence of the utility of periodic meetings of government chiefs with their principal military and civilian advisers. Hence there followed, after the pattern set at the Atlantic conference and ARCADIA, a series of meetings, from Casablanca to Potsdam, at which the major issues of the war were settled. In some of the conferences, the Soviet Union, China, and other United Nations participated, but usually the function of the meetings was to serve as a clearing house for Anglo-American plans.

Ultimate decisions on major military policies were taken by President Roosevelt, as Commander in Chief of the U.S. forces, and by Mr. Churchill as British Prime Minister and Minister of Defense. Each of those leaders were inclined to assume a more active part in framing military strategy than was conventional with civilian officials in their respective states, and

The establishment of the Combined and Joint Chiefs of Staff did much to secure for the Army Air Forces a position commensurate with their growing size and power in the military service of the United States

it was highly desirable that they be served by a common staff organization. The basic elements for such a body existed already in the U.S. Joint Board and the British Chiefs of Staff Committee, with their staff organizations, but inasmuch as those bodies sat respectively at Washington and London, some practical form of liaison was required. In ABC-1 it had been suggested that this be achieved by the exchange of permanent military missions. The suggestion had been carried out in 1941 with the establishment of the U.S. Special Observer Group in London and the British Joint Staff Mission in Washington. There remained the task of perfecting this initial machinery, including the subsidiary staff agencies, and of regularizing procedures. These goals were achieved during the weeks following the Washington conference, and during the same period significant changes occurred in the organization and command structure of the armed forces of the United States. To some extent the latter changes were brought about by conditions peculiar to the U.S. services, but they were profoundly influenced by the new Anglo-American staff organization. And in each case the status of the AAF was improved.

In consonance with their previously declared interest, the British chiefs of staff on 10 January presented to their American opposite numbers a memorandum on post-ARCADIA collaboration. The paper, suggesting the establishment of a permanent staff organization, was discussed in detail, revised by the U.S. chiefs of staff, and at the last ARCADIA session on the 14th was submitted to the President and Prime Minister. Although the principal features of the plan were never challenged, it was subsequently revised in a draft of 24 January and adopted on 10 February. This final version formed, as it were, the constitutional framework for the combined direction of the war; and in view of the remarkable success of Anglo-Amer-

ican collaboration, it may be considered as one of the most significant documents in the long history of military alliances.

The most important element in the new machinery was the Combined Chiefs of Staff (CCS). Actually, that body had existed at ARCADIA; what was new was the designation and the provision for continuous rather than periodic sessions. In choosing the title, American rather than British usage was followed: the term "Combined" was officially defined as connoting collaboration between two or more of the United Nations, "Joint" as connoting collaboration between two or more services of a single nation. This provided a more precise designation than had existed before, though in respect to the subsidiary agencies it reversed rather than confirmed earlier practice; thus the group which had been commonly referred to as the Joint Planning Committee now became the Combined Planning Staff (CPS).

The Combined Chiefs of Staff was to sit normally in Washington, with regularly scheduled meetings. It was to consist of the United States chiefs of staff and the British chiefs of staff or, in their absence from Washington, of their duly appointed representatives. For the British this meant dual representation. Their members of the CCS were Adm. Sir Dudley Pound, Gen. Sir Alan Brooke, and Air Chief Marshal Sir Charles Portal, representing the three services, and Field Marshal Sir John Dill representing Mr. Churchill as Minister of Defense. Sir John Dill was to remain in Washington after the departure of his three colleagues, and with him were to act, vice those members, the British Joint Staff Mission—Adm. Sir Charles Little, Gen. Sir Colville Wemyss, and Air Marshal Arthur T. Harris. The United States members consisted of Adm. Harold R. Stark, Chief of Naval Operations; Adm. Ernest J. King, Commander in Chief, U.S. Fleet; Gen. George C. Marshall, Chief of Staff, U.S. Army;

and Lt. Gen. H. H. Arnold, Chief, AAF and Deputy Chief of Staff, U.S. Army.

The use of the existing British Chiefs of Staff Committee as a model for the new organization raised two awkward questions. In the British system, the RAF enjoyed the same status as the older services, with parity in cabinet representation, and in military command; in the American organization, the AAF was only a part of the Army. British practice had prevailed at ARCADIA to the extent that AAF members had met, in each committee, with their British counterparts and on terms of quasi-equality with U.S. Army and Navy members. That arrangement was perpetuated in the appointment of General Arnold to the Combined Chiefs of Staff, though he was officially a *deputy* chief of staff. In the second place the American members had not liked the idea of including in the CCS a special representative of the Minister of Defense, since the ready access to the President of such a personal representative of Mr. Churchill might make difficult the maintenance of normal military channels of communication and control. The arrangement was later equalized by the appointment in July of Adm. William D. Leahy as personal chief of staff to President Roosevelt in place of Admiral Stark. It was apparently the influence of the CCS organization which determined the formation of the U.S. Joint Chiefs of Staff (JCS), made up of the four American members. There was no official charter establishing this committee, but by the end of February it had assumed responsibilities toward the American war effort comparable to those of the CCS at the combined level.

For the CCS, responsibilities were specifically enumerated. They were to include, under the heads of the two governments, the formulation and execution of policies and plans concerning: (1) the strategic conduct of the war; (2) a broad program of production conceived in terms

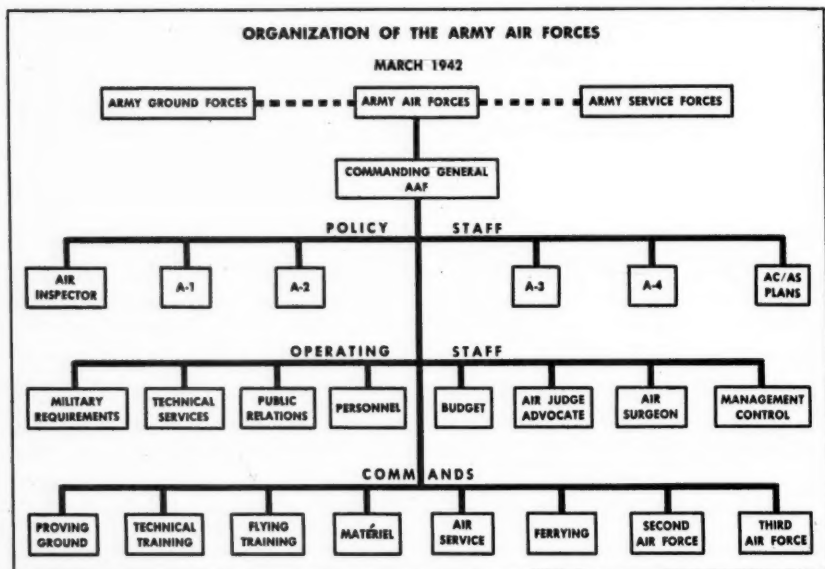
of that strategy; (3) allocation of raw materials and weapons; and (4) assignment of shipping for personnel and matériel. Procedure in carrying out these tasks had already been described in the directive issued to the supreme Allied commander of the ABDA area. On all important military matters outside the jurisdiction of the theater commanders, the Combined Chiefs were charged with developing recommendations and submitting them to the President and Prime Minister for approval. The issues under consideration might originate with the theater commanders, with the government of any of the United Nations, with the U.S. or British chiefs of staff, or eventually with their subordinate agencies. The functions of the CCS (and similarly of the JCS) were properly staff rather than command. Ultimate decisions, of course, lay with the President and Prime Minister, and the execution of the enforcing directives was a responsibility of a theater or continental commander. Yet to an important degree the broad direction of the war strategy was the work of the Combined Chiefs themselves. This meant, save for the final decision by the civilian government chiefs, that the war effort was controlled by a committee. The faults inherent in committee rule were not always absent. It is difficult to achieve perfect unanimity of opinion among eight strong-minded men, each accustomed to command and each motivated by a different combination of national, service, and personal factors. Yet on each issue, agreement—or consent—was desirable; there was no formal voting or majority rule. In view of the paralyzing possibilities of what amounted to the *liberum veto*, it was fortunate that, whatever clashes of opinions may have occurred, the members of the CCS were able in most issues to compromise their several suggestions in a decision that could be accepted by all. One fact of extreme importance for the United States was that the

membership of the Joint Chiefs of Staff remained unchanged, after the appointment of Admiral Leahy, until after the war ended; this continuity in personnel, so unusual in a military body, contributed much to smoothness of operation of the JCS.

In the interests of efficiency it was desirable that the Combined Chiefs of Staff be provided with permanent staff sections. The British paper on post-AR-

conventional "G's" of the U.S. Army General Staff.

Although there was no hierarchical arrangement of the several sections, those being coequal in status and on terms of mutual inter-change of communication, the Combined Planning Staff occupied a central position vis-à-vis the Combined Chiefs of Staff. That section, which had operated at ARCADIA as the Joint Planning Committee, was charged with preparing such



CADIA collaboration had designated several of the required agencies, again based on British models, and these were set up by CCS directives at the time that body achieved its formal organization. For the most part the new offices merely continued, in a more formal guise and under new designations, the machinery which had grown up at ARCADIA. The form the new sections assumed then was that of Anglo-American committees rather than of the

studies and plans as the CCS should direct. Its membership included the chief planning officers of the U.S. Army, Navy, and AAF, and similar representatives of the British services. The American members, when sitting separately, constituted also the U.S. Joint Planning Staff.

The new Combined Intelligence Committee also continued an existing organization. The American members, who formed the U.S. Joint Intelligence Committee, con-

sisted of the directors of intelligence from the Army, Navy, and AAF, and representatives of the Department of State, the Board of Economic Warfare, and the Coordinator of Information. A full-time committee was also appointed to work permanently with the British Joint Intelligence Committee in Washington.

The Combined Military Transportation Committee (CMTc) was to advise the CCS on transportation problems involved in their various projects, especially in respect to requirements for overseas movements. For any contemplated operation, the American and British members were to determine the shipping which could be made available by each nation through consultation respectively with the War Shipping Administration and the Ministry of War Transport. Where combined use of shipping was involved, any adjustments necessary should be referred to the Combined Shipping Adjustment Board. Where lack of shipping or kindred factors (rail, port, etc.) threatened to strangle an approved plan, the CMTc with the CPS were to report to the Combined Chiefs to obtain the requisite priorities. American membership consisted of the War Department's G-4 and his chief transportation officer, a representative of the AAF, the director of the Naval Transportation Service, and his planning officer.

In view of the acute problems of distribution of air matériel, the combined Munitions Assignments Board (MAB) was of special importance to the AAF. This extended to British as well as American production the idea of inter-Allied control which had been functioning since 1940, but which was now made even more necessary by the adoption of the Victory Program. The mission of the MAB was to keep current estimates of U.S.-British munitions resources, considering such variable factors as production achievements, matériel reserves, rates of wastage, combat forces, shifts in strategy, etc.; and, on

the basis of these estimates, to recommend to the CCS schedules for the allocation of matériel among the United Nations. Separate boards sat in Washington and London to assign respectively munitions produced in the United States and United Kingdom. A civilian, Harry L. Hopkins, headed the board in Washington, which included representatives of the Army, Navy, and AAF, and of the three British services. It was a token of the importance of this board to the AAF that its member was the Chief of the Air Staff, Maj. Gen. Millard F. Harmon. He served also as chairman of a subsidiary group, the Munitions Assignments Committee (Air) and the AAF in this body continued to play the important role it had previously enjoyed in the Joint Aircraft Committee.

As the war went on, the combined and joint machinery grew more complex, the size of its personnel greater. It could not, in the nature of things, wholly escape the taint of bureaucracy, and that its officers could partially escape the standard "battle of the Pentagon" jokes was perhaps due to the fact that they were more often housed in another building. But the war, being global, was also complex and great in size; the task of planning operations and deployments in every continent, of finding resources and establishing relative priorities—this required a staff organized on a scale and in a manner hitherto unknown in the United States. Perhaps the magnitude of the task can be fully appreciated only by those who have made an intensive study of the files of the Combined and the Joint Chiefs of Staff. The responsibility for keeping those records, incidentally, was no light one. It was vested, at the two levels, in the Combined Secretariat and the Joint Secretariat, which prepared and circulated the various draft and final papers and which kept a permanent record of the proceedings at staff meetings. Here again initial British influence was strong.

The establishment of the new machinery

for combined and joint control of the war effort did much to secure for the air arm a position commensurate with its growing size and power through the inclusion of AAF representatives in each new agency. Concurrently, the War Department was undergoing structural modifications which contributed to the same end. The reorganization which went into effect on 9 March 1942 was the fruit of months of study and debate precipitated by the military crisis of 1940-41; to understand the issues involved, it is useful to recall briefly the nature of the Army's administrative machinery when mobilization began. At that time most responsible leaders within the War Department were agreed that the existing organization was ill attuned to the needs of modern war—specifically that reforms should be instituted which aimed at decentralization of staff work in Washington, at unity of command in the field. In practice, those principles were difficult to reconcile, and among the several agencies concerned there existed wide differences of opinion as to the most feasible solution for each. The reorganization of March 1942 was essentially a compromise, a wartime expedient which postponed rather than effected a final settlement. The immediate background of this temporary solution may be sought in a three-cornered struggle between the General Staff's War Plans Division, General Headquarters, and the Army Air Forces. Much, though certainly not all, of the controversy turned on the relation of the air arm to the military establishment.

General Headquarters was of recent origin, but the desirability of such a staff in the event of war had long dominated Army thought. The Harbord Board of 1921, drawing on the experience of the AEF in 1917-18, had recommended establishment of a staff comparable to Pershing's GHQ which should channel War Department activities into the theater of operations. The core of this headquarters

was to consist of the General Staff's War Plans Division—indeed it was in anticipation of such an eventual function that the latter office had been created and charged with the preparation of over-all strategic plans. Modified in detail in 1936, the Harbord plan assumed that at outbreak of war the Chief of Staff, or some other commander designated by the President, would lead the field forces with a reinforced WPD as his general headquarters. When Nazi victories of the spring of 1940 lent urgency to the mobilization of American military forces, an initial step toward realizing this design was taken by the activation, on 26 July, of a "nucleus of GHQ." Its original mission was to direct the training of the tactical units of the Army, found in the main in the four field armies, the armored force, and the GHQ Air Force. General Marshall delegated effective control of GHQ to its chief of staff, Brig. Gen. Lesley J. McNair, under whose able leadership a small group of officers undertook the complex task of organizing and training the fast-growing Army.

A year later, on 3 July 1941, the mission of GHQ was extended to include also the planning and command of operations; in General Marshall's words, "GHQ now supersedes War Plans Division in the organization and control of task forces and operations." This was in accord with the original intent, but the new arrangement did not prove satisfactory. The Harbord report and the subsequent modifications of 1936 had conceived of a war involving a concerted effort in a single theater; in the summer of 1941 both the European Axis and Japan loomed as probable enemies and responsibilities for hemisphere defense involved the establishment of widely scattered bases and defense commands. Anglo-American plans had envisaged the establishment of several theaters of operations, but firm commitment of the field forces must depend in the initial stages of war upon enemy strategy. Under these

circumstances it did not seem wise for either General Marshall or GHQ to take the field. War Plans Division was never incorporated into GHQ and remained a potential rival to that staff in spite of the directive of 3 July.

That directive proved difficult to follow, since some of the functions and powers prescribed therein were contingent upon unpredictable circumstances. From the date of its issue, General McNair considered the authority granted GHQ unequal to the new responsibilities, and on 25 July he requested an extension of his powers. The chief difficulty lay in his lack of control over supplies, a weakness he thought fatal to effective planning for, and command of, task forces. Competing with the Navy and lend-lease for material resources, the War Department was unwilling to relinquish its control over this essential factor. Thus it was with restricted authority that GHQ in the months just before and after Pearl Harbor, planned operations and dispatched task forces, some of which have been mentioned in earlier passages of this chapter. But however important the matter of supply may have been to GHQ, the issue of most immediate concern to the Army air arm was its own relation to the new agency.

That conflict would arise between the air force and a GHQ dominated by ground officers was to be expected; what occurred was no more than a new phase of the dispute which had defied solution for two decades. Widespread recognition of the importance of air power in the European war and General Marshall's sympathetic attitude toward the Army's air arm encouraged those officers who were dissatisfied with the organizational compromise of 1935. Rather than return to the public campaign for a separate department of air, they now directed their efforts toward securing greater powers within the War Department. In these efforts they were opposed by GHQ as they had earlier been by

the General Staff, but the alignment was now less uneven. The appointment of General Arnold as Deputy Chief of Staff in October 1940 gave him immediate access to the Chief of Staff; and, if the new office was not in the same chain of command as Arnold's position as Chief of the Air Corps, it nevertheless lent additional weight to his persistent efforts.

One significant instance occurred soon after GHQ was established. As Chief of the Air Corps, Arnold promulgated on 14 August an elaborate training directive for the GHQ Air Force. Although GHQ had been made responsible for the training of all combat units, and on 19 November was specifically given "direct control" over the GHQ Air Force, the directive was allowed to stand. Thereafter General McNair exercised hardly more than a nominal supervision over air training. This *de facto* situation was legalized in the revision of Army Regulations 95-5 on 20 June 1941, whereby the Army Air Forces was established and its Chief, General Arnold, was given control over both unit and individual training. General Headquarters' responsibility for air force training was limited to combined air-ground operations.

If AR 95-5 clarified the training issue, it evoked more serious problems concerning the planning and control of air combat operations when, a fortnight later, GHQ was made responsible for those functions. One purpose in creating the Army Air Forces was to eliminate internal friction between combat and service agencies, a hope which did not materialize. In broader context, the move was one phase of the current trend toward "streamlining" the organization of the War Department. The Secretary of War had approved "decentralizing our staff work to permit Air Force autonomy in the degree needed," while opposing "segregated independence." Certainly the powers given to General Arnold as Chief of the Army Air Forces constituted the greatest single step toward

autonomy as yet taken. He was charged with control over the Air Force Combat Command, successor to the GHQ Air Force, and over the Air Corps. Specifically, his duties included determining requirements for the AAF and the "preparation of necessary plans for the development, organization, equipment, training, tactical operations, supply, and maintenance thereof, including overseas garrisons and task forces for theaters of operations and the assignment of personnel and matériel thereto." Through its commanding general, he controlled "all aerial operations" of the Air Force Combat Command save for units assigned or attached to task forces, overseas garrisons, or other commands, and on direction of the Chief of Staff was responsible for plans for the air defense of the United States.

To those most intimately concerned, this directive and that of 3 July extending the responsibilities of GHQ might seem to overlap in respect to authority for operational planning and control. Divergent attitudes toward the role of air power made difficult any substantial agreement. The newly created Air Staff clearly indicated a desire to extend the powers of the AAF along lines parallel, rather than subordinate, to those of GHQ. Such action would have in effect reduced GHQ to a ground force command, a trend which its leaders objected to but which seems to have been acceptable to WPD. In these circumstances, there was then much to justify WPD's judgment that relations between General Headquarters and the Army Air Forces were "indefinite and unsatisfactory."

General McNair was determined to preserve the authority of GHQ against threatened encroachments from the AAF. Early in July he secured from General Arnold an oral disclaimer of any intent to infringe in the realm of operational command; the latter wrote, confirming his declaration. "There is no thought of aerial combat op-

erations controlled by the Air Force Combat Command, coincident with similar operations controlled by a theater commander." Nevertheless, McNair seems to have felt that the AAF was striving for independent command; apropos of a reorganization suggested by WPD he commented that "the Chief of the Army Air Forces does not command the aviation of overseas garrisons—at least not yet." On 15 August, McNair defined in detail his concept of the relationship between the AAF and GHQ in a memorandum specifically calculated to prevent any intrusion on the latter's authority over operational planning and control. His anxiety was not ill founded; already the War Department had initiated deliberations which were to result, some seven months later, in the abolition of GHQ and the extension of air force authority. In its efforts toward that end, the AAF received effective support from WPD.

Wishing to settle the broad issues raised by the directive of 3 July and General McNair's criticism thereof, General Marshall appointed a board representing GHQ, the several sections of the General Staff, and the Army Air Forces. Convened on 14 August, the board soon recommended "a major reorganization of the War Department." Two alternatives seemed possible: to increase the powers of GHQ along lines which McNair had suggested; or to reduce it to a ground force command comparable to the AAF and add a service of supplies. War Plans Division suggested the latter solution in August, then turned to fruitless efforts to reach an agreement by modifying the present formula. By September, General McNair had become skeptical of the possibility of securing the authority requisite for effective functioning of his office. From the August deliberations on, the AAF favored drastic reorganization. On 6 October the Air Staff prorogued for duration of the emergency all attempts to secure

complete independence of the air force. This decision served merely to concentrate all efforts toward achieving a parity with the ground forces, which seemed impossible of attainment under the present status and constituency of GHQ. During the late summer and early fall, various expedients were examined by members of the Air Staff and by consultants drawn from the Bureau of the Budget. On 24 October General Spaatz, Chief of the Air Staff, forwarded to WPD a vigorous objection to the existing organization, recommending the abolition of GHQ and the establishment, under the Chief of Staff and a compact General Staff, of autonomous air, ground, and service forces. This proposal met with "100 per cent non-concurrences." A month later, on 25 November, General Arnold recommended to the Chief of Staff a reorganization of the War Department along similar lines and the creation of a military policy staff for the President which should include members from the several services and appropriate civilian agencies. The second part of this scheme lay entirely outside the jurisdiction of General Marshall; but he was "favorably impressed" by Arnold's design for the War Department, and on 28 November he directed WPD to develop a detailed plan incorporating its principal features.

Brig. Gen. Joseph T. McNarney, an air officer who had been drawn into the General Staff under the recent liberalizing policy, was put in charge of the project. He was recalled from his current assignment with the special observers in London, arriving in Washington just after the Japanese attack in the Pacific and just in time to be named to the Roberts Commission to investigate the disaster at Pearl Harbor. Thus delayed, it was early February before McNarney's group had determined the general character of the reorganization. The views of the AAF were presented to McNarney by a special committee appointed by Arnold and headed by

Lt. Col. B. E. Gates. General Headquarters was not consulted until 5 February, but General McNair had long since been convinced of the impractical nature of the existing system and raised no objections to the proposed changes. The results of the deliberations of McNarney's committee were incorporated in War Department Circular 59, issued on 2 March 1942 and effective on 9 March. As a circular, its provisions lacked permanent validity.

The new directive abolished GHQ. The field forces remained under the control of the General Staff, and the War Plans Division (later OPD) assumed planning and operational functions over all theaters of operations and the four defense commands. To care for Zone of Interior functions, three autonomous and coordinate commands were established under the Chief of Staff—the Army Air Forces, the Army Ground Forces, and the Services of Supply (later Army Service Forces). The General Staff was reorganized to include a more equitable proportion of air officers. This arrangement removed a long-standing grievance by giving the air arm equal status with the ground arm, if not with the Army itself. It did away, too, with the internal friction which had stemmed from the ambiguous division of authority between the Office of the Chief of the Air Corps and the Air Force Combat Command. Those agencies indeed were eliminated in the new AAF, and the functions of the former were divided between a reorganized Air Staff and a number of subordinate commands in the Zone of Interior. As for the AFCC, its very *raison d'être* had disappeared during the early months of the war: Of the four continental air forces previously assigned to it, the First and Fourth had been turned over to the Eastern and Western Defense Commands, respectively, and the Second and Third had become essentially agencies for unit training. For all his elevation from Chief, AAF to Commanding General, AAF, Arnold had

been shorn of the limited combat functions he had previously enjoyed by virtue of his control over the Combat Command.

Ostensibly, the Army Air Forces had been reconstituted merely as a supply and training agency. That fact may have been overlooked by the casual reader of public announcements of the new "streamlined" War Department organization, which according to one journalist was so pleasing to air officers that they "practically trod on air." But the limitation was clearly indicated in the new statement of the AAF mission—"to procure and maintain equipment peculiar to the Army Air Forces and to provide air force units properly organized, trained and equipped for combat operations." In theory it was only through War Plans Division that Arnold, as Commanding General, AAF, could affect the planning and control of combat operations.

In reality the influence of AAF Headquarters on the actual conduct of the war went far beyond a literal interpretation of Circular 59. Here, as so often in the course of the war, it proved impossible to separate multiple functions held by one person, and what Arnold could not do as Commanding General of the AAF he might accomplish as Deputy Chief of Staff. In that capacity he had helped frame military policy during the months before Pearl Harbor; he had attended the Atlantic conference; and he had sat sometimes—not always—in the President's unofficial War Council. During ARCADIA, Arnold had acted as one of the Anglo-American chiefs of staff; and with the formation in February of the CCS and JCS he was designated unequivocally as a member of each.

There was still a curious anomaly in his situation. Within the War Department, Arnold was subject to Marshall as Chief of Staff, and though the latter had long since proved his interest in the cause of air power and had favored Arnold's inclusion in the CCS, there was still the stubborn facts of seniority and rank: Arnold

had only received his third star with the advent of war and was not to be made a four-star general for another year. Within the CCS and JCS there was no hierarchy and legally, at least, the Commanding General of the Army Air Forces, the Army Chief of Staff, and the Chief of Naval Operations shared equal responsibilities and powers. And it was as a member of those committees rather than as commander of the AAF *per se* that Arnold was to exert his most important influence in the air war.

This tendency reached on down into the Air Staff. The policy initiated in AR 95-5 of giving the AAF representation in the General Staff was extended in Circular 59; the ultimate objective was that roughly half the members of that body should be air officers. If this looked on paper as an equitable solution, it was not wholly satisfactory to the Air Staff. Perhaps the crux of the matter lay in the relationship between AWPDP and WPD, with its peculiarly important influence in formation of strategic policies and in the conduct of operations. In October 1941, AWPDP had objected that WPD was trying to monopolize planning functions which were more appropriate to the Air Staff and suggested that responsibilities for planning be divided along functional lines between the two offices. This was in reality an effort to establish two distinct and correlative agencies; the same attitude had been manifested in the fashion in which the Air Staff had compiled AWPDP/1 in August, and it was to be more pronounced after the reorganization of 9 March 1942. The fact that in the several staff committees ancillary to the CCS and JCS the AAF members were peers of their Army and Navy opposite numbers encouraged that attitude, which had been tacitly supported by the War Department on 2 December when it authorized the Air Staff to communicate directly with the air staff of the British Joint Staff Mission.

An astute English member of one of the

staff sections serving the CCS was once contrasting, from his own wide experience, the different fashion in which his British and American colleagues interpreted their functions. It was his contention that in such an agency—say, for example, the Combined Planning Staff—the British members acted as a team with full authority to resolve differences of opinion without consulting their respective service chiefs and thus were able to present to the Combined Chiefs a single approved report. Conversely, he thought the American members brought to a meeting the opinions of the heads of their respective services, and lacked power to compromise those opinions without reference to higher authority.

These observations were made at the height of the air war in Europe; they were made informally and with some pardonable exaggeration to emphasize an argument. Sober judgment could no more confirm the purported dictatorial powers of the service chiefs than it could transform the genial "Hap" into a *Fuehrer*. But it was significant that to an observant ally the U.S. service commanders possessed widest powers, and that in that respect the AAF differed not at all from the U.S. Army and Navy.

One factor which affected the direction of air combat operations had no reference to the text of the new circular. That was the personal relation of General Arnold to air force commanders in the theaters and in continental commands. Such a factor is by nature imponderable, difficult either to describe or to document; but something of its flavor may be sensed in a perusal of the extensive correspondence between Arnold and air force commanders in the theaters—particularly in the "op-

erations letters" which flowed regularly between the combat zones and Washington. There was in this correspondence no violation of the conventions of military channels; rather it constituted an effort, attended by varying degrees of success, to inform, encourage, and often to placate AAF generals scattered throughout the world. In an officer corps as small as was that of the prewar Air Corps, it was natural that all senior officers be acquainted. If this heightened at times the understandable rivalry among air commanders for the inadequate forces and supplies available, it also made possible a certain indirect control from Washington through letters written more often in the "Dear Tooe" or "Dear Miff" tone than in approved AGO style.

Thus in practice the Army Air Forces and its commanding general came to assume a role far more important than that prescribed in the reorganization of 9 March 1942. AAF officers were schooled to avoid use of the term "independent air force," but in most important respects the AAF enjoyed tacitly a quasi-equality with the Army and Navy rather than the parity with the AGF and ASF which was its legal status. On 15 June the War Department, in a revision of AR 95-5, repeated the definition of the AAF mission as it had been carried in Circular 59. A few days before, the Chief of the Air Staff had written that "the main objective of the Army Air Forces is to operate effectively against the enemy the maximum number of organized units and airplanes possible." This was a much broader interpretation of functions than that which had been officially designated to the AAF. In general it was also a more accurate description of AAF activities.

Raising the Educational Qualifications of Regular Army Officers

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ANNOUNCEMENT of the program to raise the educational level of Regular Army officers to two years of college or its equivalent (the present minimum standard for appointment) met with a rather surprising amount of interest throughout the Service.

Participation in this program is entirely voluntary. Neither the Department of the Army nor local commanders will direct officers to participate. However, each commander has been given the direct responsibility of making the program a matter of personal concern in so far as it pertains to officers of his command. The Department of the Army administrative instructions implementing the program (Circular No. 146, dated 20 May 1948) are clear and complete and of themselves should be sufficient to convince the thinking officer of the desirability of his taking advantage of the educational opportunities available to him. But in line with the repeated objective of Lieutenant General Willard S. Paul, Director of the Personnel and Administration Division of the Army General Staff, to "put the 'personal' in personnel," it is felt that the greatest interest and incentive on the part of the individual officer will stem from the personal contact and encouragement of his immediate commander.

For the benefit of readers of the *MILITARY REVIEW* who do not have access to Department of the Army Circulars, the

salient features and administrative procedures established by Circular No. 146 are outlined herein. An example of the interest aroused by the program was publication by the *Army-Navy Journal* of the entire text of the circular, which is not ordinarily done in dealing with lengthy Army administrative instructions.

Purpose of Program

The announced purpose of the program is to raise the general educational level of Regular Army officers so as to:

a. Enable all officers to attain the level of education which is now the minimum requirement for appointment in the Regular Army (two years of college). This attainment may be demonstrated by successful completion of a Cooperative General Culture test which the Army has adopted for this program. Or it may be demonstrated through earning college credits. The latter method is preferred as officers are encouraged to continue beyond the primary objective of the program with a view toward earning academic degrees, in which case completion of the test would serve no useful purpose.

b. Better prepare officers for participation in other educational programs at military and civilian institutions, with a greater probability of success at the higher levels.

c. Provide these officers with a basic education which will constitute a more

firm foundation to assure efficient performance of assigned duties under the varied requirements of Army service and leadership.

Until all interested Regular Army officers have achieved the primary goal of the two-year college level, the program will operate under centralized control of a Coordinator in Career Management Group of the Personnel and Administration Division of the Army General Staff. This "control" is applicable only to Regular Army officers (and to WAC officers in view of legislation authorizing appointment of Women's Army Corps officers in the Regular Army). However, the Circular emphasizes that similar opportunities for self-improvement are available to all military personnel of all components on extended active duty.

The Office of the Coordinator does not

a college degree, as most registrants under the program are doing. The *ultimate* stated objective of the program is the attainment of academic degrees by greater numbers of Regular Army officers through utilization of available educational facilities.

Interrupted Educations

The education of millions of young Americans was interrupted or suspended by their military service during World War II. After demobilization, colleges and universities enjoyed the largest enrollments in their histories as veterans avid for knowledge availed themselves of their benefits under the "GI Bill of Rights." It is but natural that there should be thousands of officers, whose demonstrated abilities during the war warranted their appointment in the Regular Army but whose education was interrupted by

With a program that is entirely voluntary, the Department of the Army is seeking to raise the educational qualifications of those officers whose formal schooling was curtailed by the war or by other reasons

have the facilities to give personal counsel and maintain records for all personnel taking advantage of Army educational opportunities. However, local Troop Information and Education officers throughout the Army are equipped to advise interested personnel concerning these opportunities.

The Circular points out that the great majority of Regular Army officers not only meet present minimum educational standards for appointment, but are college graduates. Thus it is apparent that non-graduates may find themselves at a disadvantage when they compete for certain types of duty assignments. Under the new program it is hoped those who are already qualified at the two-year college level, or who qualify themselves under the program, will plan to go beyond the two-year level with a view toward earning

the war, who are similarly desirous of overcoming their educational deficiencies. Other integrated officers who dropped out of school for various reasons before the war (some as long as twenty-six years ago) also recognize the advantages of a degree. A fair number of officers not on active duty who were tendered appointment in the Regular Army requested and were granted deferment in acceptance to permit completion of schooling in which they were engaged. All appointments under the integration program had to be accepted by 31 December 1947, as the enabling legislation expired on that date. However, a few officers nearing graduation were granted leave without pay at their own request to permit completion of their schooling.

The desires of integrated officers to be detailed to full time duty as students

for the purpose of completing under-graduate training are highly commendable. It might appear that this would entail little direct cost to the Army as these officers are eligible for the "GI Bill of Rights" benefits, or are willing and able to bear tuition costs themselves. But entirely aside from the pay and allowances of such officers, and even were they willing to attend college on a leave without pay status, present demands for competent officers to perform strictly military duties preclude the loss of their services during the foreseeable future. It must be kept in mind at all times that no inference that lack of a college education connotes a substandard officer is even remotely suggested. On the contrary, during the war each integrated officer more than amply demonstrated his abilities and professional value to the Army, and he is acknowledged to be eminently qualified to perform the purely military duties for which he is now needed.

The Army's sole desire is to encourage and enable each officer lacking college education to gain parity in every particular with his brother officers, most of whom do have college educations. His doing so is entirely optional with him and he will not be penalized if he does not elect to take advantage of the opportunities afforded him. However, for the reasons above discussed, achievement of the primary and ultimate objectives of the announced program must be accomplished through off-duty self-study courses, correspondence courses, group study classes, and resident courses at accredited colleges and universities when station assignments permit. Each officer is required to perform his share of foreign service, during which the acquisition of college credits will generally be limited to those earned by correspondence. However, the great number of educational institutions at or near activities to which Army officers may expect to be assigned at some time during their careers is such as to indicate that there is no

insurmountable barrier to a determined officer satisfying resident study requirements for a degree. Even some overseas commands offer local opportunities to earn resident study credits.

Under the guidance of the Chief, Troop Information and Education Division, Special Staff, United States Army, the program employs the framework of organization which is now in use by the troop information and education program for providing education through the United States Armed Forces Institute and other sources. The local TI&E officer assumes the role of consultant and advisor to participating officers.

Participation Procedure

Each officer desiring to participate in the program registers with the Coordinator through the nearest TI&E officer. This procedure enables the officer to receive early and detailed advice concerning opportunities under the Army Education Program as each TI&E officer is thoroughly conversant with the program and has copies of applicable publications. Although personal contact with the TI&E officer is recommended, such contact will not always be feasible, hence informal correspondence between registrants and TI&E officers is authorized. Direct correspondence is also authorized between TI&E officers and the Coordinator on matters peculiar to the program, and by individual registrants through local TI&E officers on problems that cannot be solved locally.

The Circular prescribes a form letter for registration to insure that all essential particulars concerning the registrant's civilian and military schooling are recorded. Upon registration, the officer may elect to take the sophomore level Cooperative General Culture Test, in which case the test is administered by the local TI&E officer. Results of the tests, which are scored by USAFI, are forwarded by USAFI direct to the Coordinator.

Registration letters are forwarded by local TI&E officers by direct indorsement to the Coordinator. This expedites processing and obviates the administrative burden of intervening headquarters in adding indorsements of no value in consideration of individual cases. In his forwarding indorsement, the TI&E officer summarizes his interview with the registrant, the advice given him, and his plans if they have crystallized.

The Coordinator considers the officer's

commendations constitute merely a guide indicating over-all requirements rather than a prescribed course of action. When the registrant completes a course, the end-of-course test is administered by his TI&E officer who enters the test score received from USAFI on the officer's Progress Card and reports the results to the Coordinator for entry on the duplicate copy of the card. Similar entry and report is made by the local TI&E officer based upon official reports of civilian



An extension class in public speaking given at the Pentagon, Washington, D.C., by the University of Maryland through the Troop Information and Education Division.

record, his remarks, the remarks and recommendations of the TI&E officer, estimates his educational level and prepares the officer's Progress Card (pages 52-53). The Progress Card is completed in duplicate, with one copy being returned to the officer after the Coordinator's recommendations have been entered thereon, and the duplicate being retained in the Office of the Coordinator. Because of the variety of methods of study open to registrants, and the freedom of election of certain courses, the Coordinator's rec-

ommendations constitute merely a guide indicating over-all requirements rather than a prescribed course of action.

When the record shows that all requirements have been met, either by the Cooperative General Culture Test or the acquisition of academic credits, the Coordinator takes necessary action to make the achievement of the officer a matter of official record. This is done by notifying the officer's commander, who makes an appropriate entry in the individual's Qualification Card (AGO Form 66) and who, by a report of change (AGO Form 66-A), enables entry to be made in the copy of

the officer Qualification Card which is maintained by the Career Management Branch of his arm or service.

Circular No. 146 contains further general information concerning accreditation at civilian colleges, college curricula, types of credits, examples of college policy on acceptance of nonresident credits for degrees, and a brief outline of the Cooperative General Culture Test. This test involves six thirty-minute periods on the fields of current social problems, history and social studies, literature, science, fine arts and mathematics.

Interest in Program

Department of the Army Circulars are

United States Army, as well as the Acting Coordinator were deluged with inquiries and personal visits from officers eligible to participate in the program.

Despite determined efforts of TI&E officers to keep all Army personnel posted on educational opportunities, it came as a surprise to many officers to learn that the University of Maryland offers extension courses with classes conducted in The Pentagon and other Army installations in the Washington area. Not only does attendance at these classes earn resident study credits, but the University of Maryland offers the degree of Bachelor of Military Science and may grant officers up to sixty hours credit for their military

OFFICERS EDUCATIONAL PROGRESS CARD (D/A Cir 1948)					
A PERSONAL DATA					
LAST NAME—FIRST NAME—MIDDLE INITIAL	GRADE	SERIAL NO.	BRANCH	DATE OF REGISTRATION	ESTIMATED EDUCATIONAL LEVEL AT TIME OF REGISTRATION
CURRENT ASSIGNMENT	OFFICIAL MAIL ADDRESS				
B COORDINATOR'S RECOMMENDATIONS					
RECOMMENDATIONS					
OFFICER'S COPY					

first printed by the Government Printing Office, with distribution being expedited to the field through air mailing reproduction proofs to Zone of Interior and overseas publication depots for printing and distribution. Even so, approximately thirty days are required for these Circulars to reach company level throughout the Army. As anticipated, the earliest reaction to the new officer personnel policies was received from officers in The Pentagon and other military installations in Washington. Before the ink was dry on Circular No. 146, the Troop Information and Education officer for the Military District of Washington, the TI&E Division, Special Staff,

service and schooling. From the financial angle, many officers are unfamiliar with the various methods of Government financing of college courses. Integrated officers, or Reserve officers recalled to extended active duty, were unaware of the educational benefits for which they are eligible under the "GI Bill of Rights." Officers not eligible for those benefits were found already enrolled in college courses at their own expense, not knowing that substantial portions of the cost of such courses may be financed through Troop Information and Education channels.

Little criticism concerning the program outlined in Circular No. 146 has reached

Headquarters, Department of the Army, to date. One Reserve officer expressed resentment over the fact that the program is applicable only to Regular Army officers, overlooking that part of the Circular that states that the same educational advantages are available to all Army personnel on extended active duty. The greatest measure of advice and help is given the participant by his local TI&E officer.

An officer who wrote to one of the Service journals took issue with phraseology of the circular which is considered to be couched in obvious terms:—"The great majority of Regular Army officers are college graduates, and non-graduates may find themselves at a disadvantage

admission of Circular No. 146, penalize many able officers who were doing superior work.

It is perhaps unfortunate that the American public, not just the military services, unduly emphasizes the real or fancied advantages of college degrees *per se* without regard for type of degree, circumstances under which secured, or relevancy to fields of endeavor of individuals concerned. For it should be noted that modern educators who admit that a college degree does not "reflect the abilities, intelligence or achievement of its possessor" demand that Professors of Military Science and Tactics at their institutions be the possessors of college degrees!

(BACK)						
C. PROGRESS						
SUBJECT OF COURSES COMPLETED	COLLEGE OR OTHER ACTIVITY CONDUCTING COURSE	METHOD OF INSTRUCTION	SEMESTER HOURS CREDIT	GRADE	DATE COMPLETED	INITIALS OF TI & E OFFICER
D. PROGRAM COMPLETED						
1. DATE	2. ACADEMIC CREDITS	3A. TEST	B. SCORE	4. CUSTODIAN OF FORM 66 NOTIFIED		
1. R. RESIDENT, C. CORRESPONDENCE, E. EXTENSION.						

when they compete for *certain types of duty assignments*" (italics here supplied for greater emphasis). He countered that such a statement implied that the magical formula of a college degree was in itself an advantage to be overcome by the non-possessor of such a degree; that the type of degree, circumstances under which it was secured, and relevancy to the military field apparently had no bearing on the matter; that it seemed to place an absurdly high value on what modern educators admit does not reflect the abilities, intelligence, or achievement of its possessor, and that the non-possession of such a degree would, by the

This is an illustration of the "certain types of duty assignments" where non-graduates are indeed at a disadvantage. It is felt that the Army's evaluation of abilities of the integrated officer is amply demonstrated by its willingness to tender Regular Army commissions to officers who lack even high school education. In contrast to the feelings expressed by the officer, one of the first registrants under the program, a forty-five year old officer who had only a tenth grade education, has enthusiastically commenced work with his goal the degree of Bachelor of Science. Another integrated officer of the same age who has set his sights on a degree grad-

uated from high school exactly twenty-six years ago!

Because of the time required for Circular No. 146 to reach the attention of the 2,500 or so affected officers all over the world, an insufficient number of registration letters has reached the Coordinator to permit quotation of interesting statistics concerning numbers of registrants, average ages, average educational levels, and numbers electing to take the test as a means of acquiring academic credits. The first registration letter to reach the Coordinator, however, was not from an officer on duty in The Pentagon, but from a member of the Staff and Faculty, The Military Police School, Carlisle Barracks, Pennsylvania. The Coordinator could offer him little advice as this officer was already on the right track, having taken immediate action to obtain admittance at an accredited institution on the sophomore level after completing the College Level GED tests. Successful completion of these tests is accepted by the Army for all purposes in lieu of one year of college (Sec. V, Department of the Army Circular No. 67,

1947) and by many civilian institutions for admittance on the sophomore level on at least a provisional basis, particularly in conjunction with military service and schooling for which the granting of academic credits is recommended by the "Guide to the Evaluation of Educational Experiences in the Armed Services."

Within less than a month of publication of the Circular, officers in all parts of the United States and in Alaska had registered with the Coordinator, and registration letters have now been received from practically all parts of the world where United States Army personnel are assigned. The great majority of registrants elected *not* to take the Cooperative General Culture Test, but instead to earn college credits. The Department of the Army is gratified by the response to date and is confident that officers who take advantage of the educational opportunities afforded them by the Army Education Program will appreciate the Department's motivation of their incentive for self-improvement.

Professional ability, the ultimate goal toward which all training and education, all effort and experience are directed, has never before been so urgently needed nor so arduously achieved. The future commander or staff officer must have a thorough and intimate knowledge of concepts and doctrines, strategy and tactics, and the weapons of his profession.

Moreover, the problems of technological warfare, the responsibilities to society imposed by modern weapons of such terrible destructiveness, and the confluence of military, industrial, and political spheres make it imperative that he also have a clear understanding of the forces which unite to shape our civilization.

General Muir S. Fairchild

Construction Power and Military Operations

Colonel R. J. Fleming, Jr., *Corps of Engineers*
Chief, Engineer Organization and Training Division
Office, Chief of Engineers

MODERN warfare has become such a complex business that it is impossible to put the finger on any single aspect and to say triumphantly, "This is the key to success." It is possible, however, to divide the military profession into four broad fields, more or less equal in importance, and to accept the principle that over-all military success depends upon success in the four. These four fields are: first, research and development of weapons and equipment; second, industrial capacity to produce the weapons and supplies; third, combat power to wield the weapon designed by science and produced by industry; and, fourth, construction power necessary to advance a fighting man to a position where he can bring his weapon to bear.

A little consideration will show that this rough division applies regardless of the type of weapon or the arm of combat power; the four broad fields are present in the application of sea power, of ground power and of air power. Over-all success does not require that we outstrip our enemy in each of the four fields; a lagging behind the enemy in any one, however, will require tremendously increased efforts in the other three to overcome the deficiency. For example, it is possible to overcome

a deficiency in research and development and win a war with weapons slightly inferior to those of the enemy; this can only be done, however, at the expense of increased losses to combat power in men and matériel and increased drain on industrial capacity. Similarly, it is possible to win a war over an enemy with an advantage in combat power; applying novel or superior weapons at the right point and the right time can whittle him down to size.

Military experience in the last century shows that as the weapons become more complex, more and more construction power is required. General Forrest's famous remark about the secret of success being "to git there firstest with the mostest" is still true. In his day "to git there" required very little specialized construction power; the infantryman and cavalryman were their own military engineers, and the artilleryman manhandled his own guns and ammunition. Similarly, when some prehistoric caveman sallied forth with his specially designed and produced stone ax, he was his own military engineer to advance the weapon to its point of use.

Specialized Application

"To git there" now, however, requires

As the weapons of war become more complex, more construction power is required to advance the fighting man to those positions where he can wield the combat power which science and industry have made possible

the specialized application of construction power. This trend towards specialized construction power started before World War I. The requirement of troops, however, had not been fully appreciated and the lack of adequate, well-equipped construction troops led to a breakdown of the road systems under heavy supply traffic, even though much of it was animal drawn. The armies slowed down, then settled down to trench warfare, and the result was exorbitant casualties as each side attempted to force an issue. The added complexity of the weapons in World War II made construction power even more important. Tremendous improvements had been made between the two wars in engineer organizations and equipment; but while military engineers had a field-day all over the world, they were never more than one jump ahead of the deadline.

There is a general acceptance in the military profession of the importance of construction power. There is, however, a tendency to take this construction power for granted, and there may be a lack of realization of the phasing of its application in relation to the application of combat power.

In the wars before World War II, construction power was generally phased with combat power and, in theaters of operation, was largely simple pioneering work necessary to facilitate the advance of the ground soldier. In the Pacific operations of World War II, however, the securing of areas suitable for development as advanced air and naval bases became of increasing importance. The construction power required for these developments was much greater than the engineer effort required for advance of the ground forces, and a major portion of our construction power was applied prior to a comparable portion of our ground combat power. In other words, World War II saw the beginning of a change; ground combat power was often employed to secure elbow room

for development by construction power of bases from which air combat power could be employed; construction power not only was a much larger proportion of the force engaged than in any prior war, but also was phased ahead of the air combat power.

Early Construction

In addition to this trend within contact of the enemy, an additional development in World War II was the requirement in major construction effort for the successful deployment of our forces to the several theaters of operation. The engineers in both the Army and Navy were engaged in major construction programs prior to and in the early stages of World War II. These programs have been overshadowed by later dramatic events of the war; and there may be a lack of appreciation of their contribution. Air bases and their supply facilities do not come into existence as a result of wishful thinking. Let us take a look at the record.

The United States was granted long term leases for seven bases, extending from Newfoundland to British Guiana, in return for fifty overage destroyers in the summer of 1940 prior to declaration of the limited emergency. Action was initiated immediately to establish permanent bases at these locations; work was initiated in Newfoundland in September 1940 and was well underway at all locations in March 1941. These bases were not used for offensive action. The southern ones, however, were invaluable for anti-submarine patrol in protecting shipping lanes for oil shipments from South America. Bermuda was a major stop on one air route to Europe, Newfoundland was of incalculable value in protecting the North Atlantic shipping lanes. Additional bases on the air route to the United Kingdom were initiated in July 1941 with arrival of an engineer construction force in Greenland. American troops landing in Iceland in September 1941 not only relieved the British of security duty, but also greatly

expanded the air and port construction they had initiated. This route was vital to protection of the North Atlantic and the completion and use had to precede any build up in either supplies or troops in the United Kingdom.

Pacific Area Preparations

Construction on the Pacific northern route was initiated in 1939 as a major joint effort by the Navy and the Corps of Engineers. This route used bases at Hickam and Pearl; Midway; Wake; an Australian government landing field at Port Moresby, New Guinea; Darwin, Australia; and Clark Field in the Philippines. The completion of land runways for B-17s at Midway, Wake and Port Moresby furnished a devious and erratic route with a distance of 2,300 miles on the Wake-Moresby leg over the Japanese mandates and was vulnerable to immediate interruption. The first squadron of B-17s left Hawaii via this route on 5 September 1941 and three other squadrons from the United States used it before it was interrupted by the Japs on the outbreak of war. These four squadrons were the only B-17s available in the Philippines and the Dutch East Indies.

Construction of the Pacific southern route was initiated in October 1941, as an Army project with Navy assistance. It employed bases on Hickam; Christmas and Palmyra; Canton; Nandi in the Fiji's; Tontouta and Plaines de Gaia, New Caledonia; Townsville, Australia; Port Moresby; and Clark Field. The longest existing runway in the South Pacific was then about 3,000 feet near Suva, Fiji, which could not be extended. In spite of the confusion at the outbreak of the war, a usable route with minimum 5,000-foot runways was initiated when the first B-17s to reinforce our forces in the Far East took off from Hickam, 11 January 1942. The existence of this Southern Route was essential to our initial defensive action in New Guinea and to the initial counteroffensive in the

South Pacific and Southwest Pacific Areas. Canton Island was the key base; as the campaigns in the South and Southwest Pacific moved north, the original bases at Fiji, New Caledonia and Australia were replaced by bases farther north, and the route hinged around Canton. It is no exaggeration to state that this atoll was one of the most valuable pieces of real estate in the Pacific, and that the base there was one of the outstanding contributions to the Pacific war; it was not until after the Marshalls campaign beginning in November 1943 that alternate facilities could be developed.

English Bomber Bases

The English bomber bases were initiated by the British, and it was originally intended that they would perform all the work necessary for our Air Force. It soon became evident that their resources were not adequate for this job, and in June 1942, American engineer units were shipped to the United Kingdom. Subsequent construction of bases necessary to mount the air offensive against Germany was a joint British-American project, with the British working exclusively on about two-thirds of the facilities used by the Americans, and American engineer troops, assisted by British civilians, working on the remaining one-third of our Air installations. The American engineer troop effort was about sixty battalion-years. This was about 40 per cent contribution on about one-half the air facilities our Air Force used.

Current Problems

Now having taken a look at the record of World War II, let us take a look at the present. Research and design of weapons have not remained static. Aircraft particularly have changed with emphasis on increased load and increased speed. An increase in the gross load increases the wheel loadings; to keep unit pressures and stresses on the runways about in the range where they are now would require

an increase in the size and contact area of the landing gear. The requirement for increased speed, however, calls for a small light gear which can be retracted into a narrower wing, and this in turn imposes greater unit pressure and stresses on the runways. The improvements in operational aircraft in the three years since the war are revolutionizing the job of providing bases. A field for a squadron of our new bombers requires about two and one-half times the construction effort of a field for a squadron of B-29s; not only are longer runways required which increase the dirt moving and grading jobs, but also the increased wheel loadings require very much thicker foundations of sand, gravel, and crushed rock under the runway and taxiway pavement. Fighter planes, too, have changed, and the latest jets cannot operate out of cow pastures with pierced steel plank runways. Similarly, ground weapons have progressed; our latest fixed and floating bridges are designed to carry 100-ton loads. This requirement is universally accepted now; its mere mention a few years ago would have caused consternation.

Now, let us take a look at the crystal ball. It would be possible to write volumes analyzing the strengths and weaknesses of our country's military position and still not adequately cover the subject. Speaking very generally, however, it appears that there are three elements of strength which we possess to a greater degree than the rest of the world; first, the disinclination of the average American to do things the hard way, and his consequent demand for and use of machines and gadgets to do his work; second, a research and design system which is constantly developing better gadgets; third, our unequalled industrial capacity to produce these gadgets, no matter how complicated. Military operations in World Wars I and II were based on exploiting these elements of strength, and both common

sense and prudence dictate that we should continue this exploitation.

Ground Combat Power

In connection with this exploitation, let us consider the role of ground combat power in securing elbow-room for development of bases for air and naval power. Certainly in the initial phases of any future war our efforts will be primarily towards the establishment of operating bases for our complicated long-range weapons. These bases may have to be constructed under widely different situations of climate, isolation, supply facilities and native labor availability. It would be foolish to try to forecast exact locations, but again common sense indicates that initial construction would be in areas which could not be easily overrun by an enemy ground power using land communications. The likely areas, therefore, are those which are protected from a major ground assault by isolation, by climate, and by the sea. From a construction viewpoint, many logical areas are the most difficult as they lack development, materials and labor.

In the immediate future, these initial bases would be for our present conventional long-range weapons of air power and sea power. In the more distant future, advances in research and development will have made our present weapons obsolete, and our imagination is the only limit on our forecast of what the weapons then will be. We can say now, however, that construction power will be necessary to advance combat power to a position where it can wield its weapon, and we also know that as the weapons become more complex, more and more construction power is required to advance our combat power. The crystal ball may be dim and fuzzy but it does show that in the initial phases of any future war, "to git there firstest with the mostest" requires that the ratio of construction power to combat power be much greater than it ever has been before.

The Army Language School

The following article was prepared for the Military Review by the staff of Colonel C. H. Barnwell, Commandant, Army Language School, Presidio of Monterey, California.—The Editor.

THE Army Language School, located at the Presidio of Monterey, California, offers instruction in twenty-one different foreign languages in order to train qualified linguists to meet the requirements incident to the occupation of foreign countries, military missions, foreign liaison, and the collection and evaluation of intelligence.

The school provides basic language instruction on a university level for beginning students in all twenty-one languages offered, and also provides refresher language training for special students with previous knowledge of a given language. Courses are characterized by considerable flexibility and vary from four to twelve months in length depending upon the difficulty of the language and the capabilities of the students. Both enlisted and officer students of the Army, Air Force, and Marine Corps are now being trained at the school.

Origin of the School

The Army Language School has been

known by three other names and has moved its location three times since its establishment as a Japanese language training school in November 1941.

During World War II the school trained Japanese linguists in secrecy and at top speed for duty in all the theaters of war where the Japanese armed forces were present. Peacetime has found a continuance of Japanese language training for linguists performing occupation duties in the Far East, and has also provided the time to train officers and enlisted men in other strategic languages whose scarcity the war so clearly emphasized.

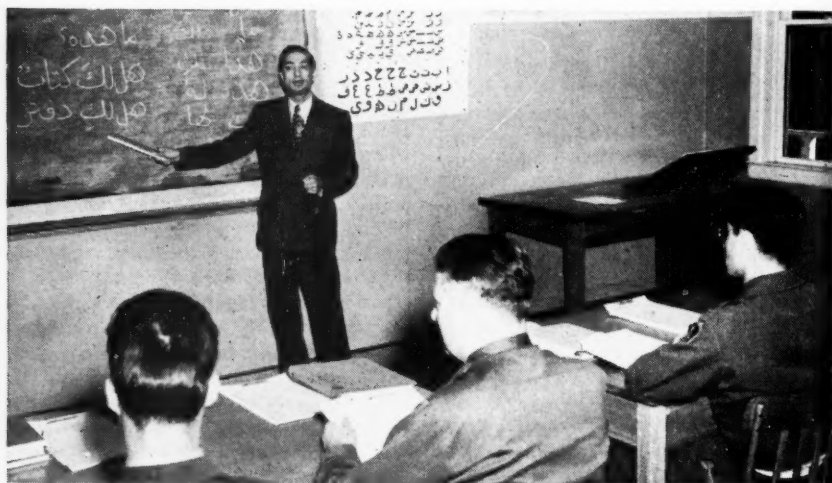
The Army Language School is a part of the program of language and language and area training which was established by the Department of the Army in 1946, and which has been continued by the Departments of the Army and Air Force under Circular 180 and AF Letter 50-51 issued on 14 June 1948.

Under this program selected officers of the Army and Air Force may receive up to four years of language and area training in certain strategic languages, and both officers and enlisted men of the Army and Air Force may receive from four to twelve months of straight language instruction in any of twenty-one foreign languages. Language and area training

To make up for the scarcity of trained linguists which World War II so forcefully revealed, the Army Language School gives instruction in twenty-one different foreign languages for officers and enlisted men

involves three to four years study, with the first year of study devoted almost entirely to obtaining fluency in the language, whereas, subsequent years will stress the political, economic, sociological and topographical aspects of the general area studied. Straight language courses stress oral and translative ability with special emphasis on the former. The first year of the language and area training, and all of the straight language training under this program, is offered at the Army Language

France in 1908 studying the language. General Stilwell was a Chinese language student. Major General Maxwell Taylor was a Japanese language student. Many other officers have found the knowledge of a foreign language not an end in itself, and not only of value for intelligence work, but as a useful means of communicating with others and of exchanging information in all phases of military operations. The commander or high staff officer who can speak, understand, and read



Instructors at the Army Language School are native speakers of the language they teach. Above, a classroom scene in the Arabic language department.

School. Officers and enlisted men who can qualify for either type of training will find it interesting, difficult, and a key to many important assignments.

Language an Asset

Expert knowledge of a foreign language is an asset which many officers of the armed forces have sought to achieve in the past, and which an ever increasing number is apparently seeking to develop and maintain at the present time. General Pershing spent several months in

the language of an ally or an enemy has a great advantage over the officer who must get his knowledge, secondhand, through an interpreter or translator who may miss the fine shades of meaning intended in the foreign language concerned.

A fluent knowledge of Spanish is an asset and almost a requirement for the officer or career enlisted man seeking assignment to any of the Spanish-American nations, and it is Spanish as is spoken in those nations that is being taught students at the Army Language School.

In similar fashion, those studying the Portuguese language are taught the language of Brazil rather than the Portuguese of the old world. The French language which so many schoolboys learn and forget remains an important military language spoken by more than forty million people in France and by some twelve million in Belgium, Switzerland, and in the French and Belgium Colonies. It is learned widely as a second language in many parts of the Middle East. Persian is spoken by approx-

Wartime methods in the teaching of foreign languages in the United States armed forces have received much attention in the public press and have led in some cases to exaggerated statements concerning the speed and ease with which it is now possible to learn a foreign language. Six and one-half years of experience with over seven thousand graduates in the Japanese language and with an ever increasing number of graduates in the other twenty languages taught at the Army Language



Army Language School classes in which the student must actively participate, are small. Above, instructor and students in a Russian language class.

imately twenty-five million people not only in Iran but also Afghanistan, Baluchistan and parts of the Soviet Union. Russian is spoken not only by the over one hundred million Russians in the Russian Federated Republic, but also as a second language by a large part of the Soviet citizens in the other parts of the Soviet Union. A knowledge of Japanese permits communication not only with the eighty million people of Japan, but also is a key to the vast amount of information and research about the rest of Asia.

School have shown that there is no "magical Army method" of learning a language, that there is no substitute for time and hard work. Long hours of study, a thorough knowledge of grammar, and constant repetition are necessary.

• Instruction Methods

It must be admitted, however, that the student at the Army Language School has certain advantages. First of all he is a volunteer: he is here because he wants to learn, and in many cases he is studying to

fill a specific assignment requiring the knowledge of a given foreign language. He studies nothing but language five days per week for a total of about forty-five to fifty hours. His tuition is free and he receives a salary and allowances while he learns. Classes in which the student may participate actively as an individual, such as conversation or reading, are small: five to seven students per section, or smaller.

All instructors are native speakers of the language they teach, and know not only the language but the customs of the country where the language is spoken. Some instructors are officers and enlisted men of the Army and Air Force but about three quarters of the faculty are civilians. Many different methods of teaching languages are employed and the most successful parts of each are adopted where found most profitable. Students and instructors are encouraged to submit suggestions for the improvement of the instruction and considerable freedom in the selection of teaching methods is permitted. Based upon the recommendations of several independent educational experts, an instructor guidance section is being established to improve further the teacher efficiency and teaching methods.

The School provides text books and instructional material necessary for study in all languages. Where possible, these books are obtained in the United States, and in other cases they are obtained abroad through the military attaché system or are prepared with brush, pen or typewriter by the school faculty and are reproduced in the small training aids section maintained by the school. Such instructional aids as phonograph records and sound-scriber discs are prepared in the school to provide the student opportunity for the

necessary repetition of words in languages with tones, such as Chinese, or in languages with sounds unusual to the American ear, such as Russian or Arabic. Recordings are also used to demonstrate student progress during the course and to point out recurring errors needing correction.

Student Selection

Students are selected for attendance at the Army Language School on the basis of eligibility qualifications established by the Army and Air Force. These qualifications vary among the services and according to the type of course to be studied. They include professional qualifications of a practical nature, and language aptitude qualifications which may be based upon amount of total education, high marks in language study in high school or college, previous knowledge of the language to be studied, or the passing of the Army General Classification Test with a high score.

Individuals vary widely in certain traits which are indicative of language aptitude, and considerable study is now being devoted to the development of tests which will measure these traits accurately. This research is being conducted by a special section at the School.

The officer or enlisted student who is selected for training at the School is qualified, upon graduation, to meet the Army's requirement for linguists in either Albanian, Arabic, Bulgarian, Chinese, Czechoslovakian, Danish, French, Greek, Hungarian, Japanese, Korean, Norwegian, Persian, Polish, Portuguese, Rumanian, Russian, Serbo-Croatian, Spanish, Swedish, Turkish, or to continue his studies at the various universities to which selected graduates are sent for training in allied subjects.

MILITARY NOTES

AROUND THE WORLD

USSR

New Jet Fighters

Several new jet fighter planes and bombers were unveiled by Russia at the annual Soviet Air Show.

United States military observers said that they considered that the most important feature of the show was the uncovering of the new jet fighters and bombers.

A Moscow radio broadcast later said that some of the jet fighters in the show approached the speed of sound. Sound travels at about 760 miles an hour at sea level and at a temperature of fifty-nine degrees Fahrenheit.

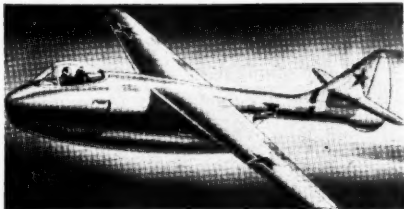
One feature of the Russian show was a flight over the field by a sample of the Soviet long-range bomber force—fifteen four-engine bombers. This was the same number flown over Red Square as part of the May Day parade.

United States observers reported that many of the planes used in the show were the same type as those used last year. Those observers also reported that the show was a "magnificent display" of training and technique, and added that progress in the development of new types of planes, particularly jets, and the use of them, was "very noticeable."

After the jet planes' performance, a group of four-motor bombers flew over the field. They were followed immediately

by large flights of two-motor bombers, attack planes and four large groups of fighters, including two groups of jet fighters.

After a short wait, the newest jets, which had not previously been unveiled, came over singly at long intervals. The first of these flew at terrific speed. After two of them had passed the field, they were followed by a brand-new jet fighter,



Soviet single-seat twin-jet fighter.

with obviously greater speed, then another new plane, and finally, fastest of all, a new jet plane, of which two were shown.

The speed of these latest planes apparently indicates that the Russians are determined to maintain priority in jet development and high-speed aviation.

Marshal Stalin's son, a major general in the Soviet air force, led the impressive parade of new and previously seen aircraft.—*The New York Times*.

AUSTRALIA

Supersonic Weapons Tested

Operational experiments, including the development of supersonic defensive rocket weapons, have begun in the prohibited 3,000-square-mile area in Southern Australia of the British-Australian Long-Range Weapons Organization. (Military Review, June 1947, p. 65.)

The research base is located at Salisbury near Adelaide, the capital of the state, where already immense stores and equipment have been accumulated. This base is expected to become the Empire's main research center for the development of supersonic weapons.

The rocket range is at Woomera, 240



miles northwest of Adelaide in one of the world's loneliest, most arid and hottest regions. No trees grow on the range's 3,000 square miles and there is only a sparse incidence of brush. From Woomera it extends across the desert for 1,200 miles toward the northwest coast of western Australia, and a further extension is planned of 1,500 miles over the Indian Ocean toward Christmas Island.—*The New York Times*.

Atom-Smashing Plant

Installation of a cyclotron at Melbourne for atom smashing is being considered by the Australian Government as part of its defense plans.—*Australian Weekly Review*.

INDIA

Army Traditions

Although the British Army is entirely out of India, its traditions are being carried on by the native armies of the two Dominions into which the subcontinent has been divided. They have inherited the martial skill and experience, tradition, and sense of duty painfully learned and evolved during 193 years of service.

Orders are still given in English; tactics and organization remain unaltered; bagpipes, tartans, and regimental marches have been passed on. But something more important remains. From the British Army young India has learned self-discipline, an essential part of the British soldier's make-up.

India, in turn, has left its mark on the British Army. Its vocabulary contains many Hindustani words, or, at least, words which the British soldier believes to be Hindustani.

Loneliness probably was the British soldier's greatest hardship. Denied a place in English society, and prevented from mixing with Indians, most were condemned to the loneliness of the cantonment. The barrack square, the dusty hockey pitch, and the dreary canteen or the mud walls of a frontier fort were the limits of their horizon.—*The New York Times*.

TRANS-JORDAN

Treaty with Britain

Trans-Jordan and Great Britain have revised their 1946 treaty, giving Trans-Jordan a stronger voice in the facilities granted British forces. The military annex to the 20-year pact provides that British troops may be stationed in Trans-Jordan in case of war, but limits British peacetime occupation to air fields at Amman and Mafrak. A joint defense board composed of equal numbers of British and Trans-Jordanian officers is set up, to coordinate defense.—*The New York Times*.

ITALY

Disposal of Fleet

The details of the allocation of units of the Italian Fleet, agreed upon by the Four Powers, have now been made public. The units are disposed of as follows:

Great Britain.—One battleship (the *Vittorio Veneto*); two submarines; eight motor torpedo boats; three landing craft; fourteen auxiliaries.

United States.—One battleship (the *Italia*); two submarines; eight motor torpedo boats; three landing craft; twelve auxiliaries.

Soviet Union.—One battleship (the *Giulio Cesare*); one 6-in cruiser; three destroyers; three torpedo boats; two submarines; ten motor torpedo boats; three vedettes; three landing craft; nineteen auxiliaries.

France.—Three small cruisers; one sloop; four destroyers; two submarines; six motor torpedo boats; three vedettes; five landing craft; eighteen auxiliaries.

Greece.—One 6-inch cruiser; one auxiliary.

Yugoslavia.—Three torpedo boats; seven minesweepers; two landing craft; five auxiliaries.

Albania.—One gunboat.

Two battleships assigned to Britain and the United States are to be scrapped in Italy.

Before the Soviet Union's quota is transferred, that power has to return the British battleship—ex-HMS *Royal Sovereign*, seven American built destroyers and three submarines lent during the War; also the US cruiser *Milwaukee*.

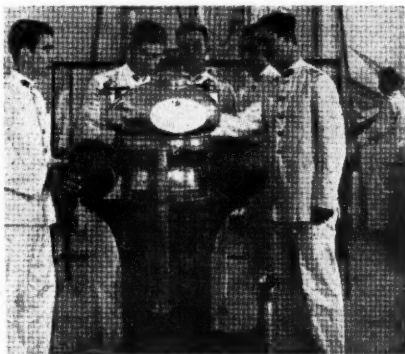
Italy has been allowed to retain the old battleship *Caio Duilio*, two 6-inch cruisers, some destroyers, torpedo boats, and corvettes; but no submarines.

The Four Powers have agreed that Italy may scrap the submarines which under the Peace Treaty she was required to sink.—*Journal of the Royal United Service Institution*.

TURKEY

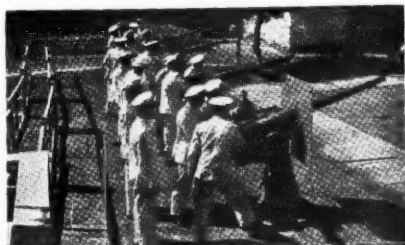
Naval College

The Turkish Naval College is located at Heybeli on the shores of the Sea of Marmora, where a total of some 450 ca-



Turkish cadets studying the compass.

dets undergo a five-year training period. The first three years are devoted to ordinary scholastic work, and in the last two the cadets are taught seamanship, naviga-



Cadet instruction on light guns.

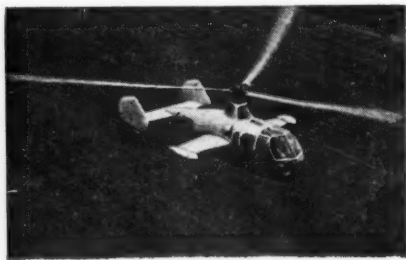
tion, marine engineering and other arts of the sea.

The naval college was opened in 1832. It was considerably enlarged during the war years and now further extensions and improvements are planned.—*The Navy*.

GREAT BRITAIN

Fairey Gyrodyne

This aircraft is something new in the field of helicopters in that it can be flown as an autogiro as well. This is



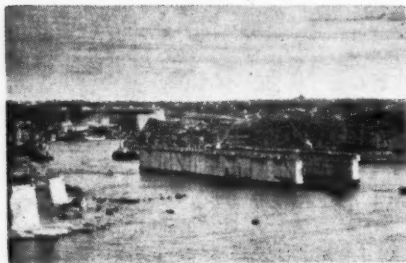
New type helicopter.

done by using a regular offset tractor air-screw mounted on the right end of the short wing in place of the anti-torque propeller usually mounted on the tail of a helicopter.

The aircraft has many new features which its designers claim give it greater safety, speed, and comfort.—*The Sphere*.

Malta's Floating Dock

The British 50,000-ton floating dock for Grand Harbour, Valetta, Malta, has been undergoing sea trials in the Mediterranean.



Giant floating dock at Malta.

The dock was constructed in Bombay, India, and divided into two sections for the trip to Malta.—*The Sphere*.

Submarine Rescue Vessel

HMS Reclaim, which was launched recently, is a submarine rescue vessel which will carry apparatus developed since World War II, including an adaptation of the Cox underwater bolt-firing gun for salvage purposes. This gun, by using explosive propellants, can drive a rivet into a plate without prior drilling. It is now possible to drive a bolt with a hole down the center—that is, a form of tube—through a steel plate. Such a tube could be driven into the skin of a submarine and a compressed air pipe could be attached to it. Air could be forced through this pipe into a flooded compartment to expel water through another orifice thus causing a sunken submarine to be refloated.—*Journal of the Royal United Service Institution*.

Atom Piles Revealed

Britain's main atomic energy research center, a top secret enterprise since it opened in November 1945, was opened to inspection by newspapermen recently. The inspection included a close look at the establishment's original uranium pile and a glimpse of a new and more powerful pile capable of developing 6,000 kilowatts of energy, sixty times that of the original pile.

Under the strictest of security measures, the newspapermen were taken on an escorted tour of the establishment. In workshops, laboratories and buildings much of the apparatus was shrouded in camouflage canvas and fenced off from view by screens.

The director of the project said that it was hoped by the coming winter to heat the Harwell laboratories and office buildings with energy from the uranium piles. He added, however, that no great strides in the application of atomic energy to industrial uses could be expected for some time.—*The New York Times*.

GERMANY

Shock-Wave Cannon

The purpose of this gun was to produce a sudden rush of air and gas at the time an airplane passed by, thus sending it out of control. The air cannon was to be used for the protection of certain vital objectives against the attacks of hedge-hopping planes, a type of attack which makes it very difficult for ordinary anti-aircraft cannon to hit the target.

An explosive mixture of oxygen and hydrogen was put into the bent portion of a tube which was pointed at the plane. Ignition of the charge produced a jet of gas which broke a twenty-four millimeter board at 200 meters.—*L'Armée Française*.

SWEDEN

Winter Medical Treatment

Intense cold increases surgical shock and increases the need for effective handling of transfusions which must be injected as promptly as possible. It would probably be impossible to give intravenous transfusions out of doors at very low temperatures. Nevertheless, this treatment must begin at the unit aid stations. Additional personnel and equipment are required, however. This work can be accomplished by forming transfusion groups using personnel and equipment from the medical companies, and dispatching them to battalion aid stations.—*Kungl. Krigsvetenskaps-Akademiens Handlingar och Tidskrift*.

BRAZIL

Officers Attend US Schools

Officers of the Brazilian Army are attending US Military Schools in increasing numbers. Recently, a second class of twenty Brazilian officers enrolled in the Chemical Corps School, Army Chemical Center, Maryland, for a two week course of instruction.—*Army and Navy Register*.

ARGENTINA

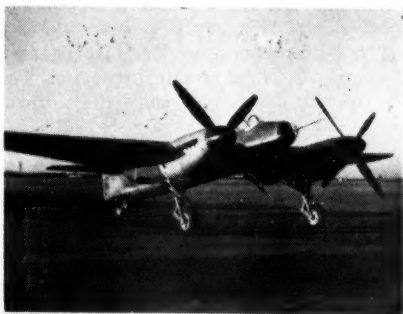
US Visit

The Argentine Republic's Minister of War, General José Humberto Sosa Molina, and a group of Argentinian Army officers, visited the United States as the guests of the Department of the Army earlier this year.

The invitation to General Sosa Molina to visit the United States was extended by the Secretary of the Army in furtherance of the practice of inviting high ranking military leaders of other American Republics to make good-will tours. During his visit he inspected military installations and equipment and observed Army training methods.—Department of the Army.

NANCU Night Fighter

A new two-motor fighter plane has been designed and built by the Argentine Aero-



NANCU night fighter.

nautical Institute for use as a night fighter and other combat missions. The plane is powered by two Rolls Royce motors of 1,800 horsepower each, giving it a speed of over 400 miles per hour.

This plane represents the latest development in the Argentinian aircraft manufacturing industry which is striving to fulfill the needs of the country.—*Aero Mundial Suplemento Argentino*.

UNITED STATES

New Speed Record Set



The North American F-86 jet fighter of the US Air Force holds the new world speed record of 670.981 miles per hour.—US Air Force photo.

The North American F-86 jet fighter, the speediest plane now in production for the US Air Force, now holds the world's record for level-flight at a speed of 670.981 miles per hour. In establishing the new mark at Muroc Lake, California, on 15 September, the plane was flown by Major Richard L. Johnson. He had also broken the record at Cleveland, Ohio, during the National Air Races, but faulty timing devices prevented the Air Force from claiming a new record.

Staff Training

Special courses for National Guard and Reserve officers consisting of three two-week courses conducted over a period of two years are now being taught in each of the Army Areas.

The courses are designed to prepare Guard and Reserve officers for Staff and Command assignments with divisions.—Department of the Army.

The plane was fully-loaded and armed for combat during the record run. The previous record (Military Review, November 1947, p. 69) of 650.6 miles per hour was established by a US Navy experimental aircraft, the Douglas D-558, in August 1947.

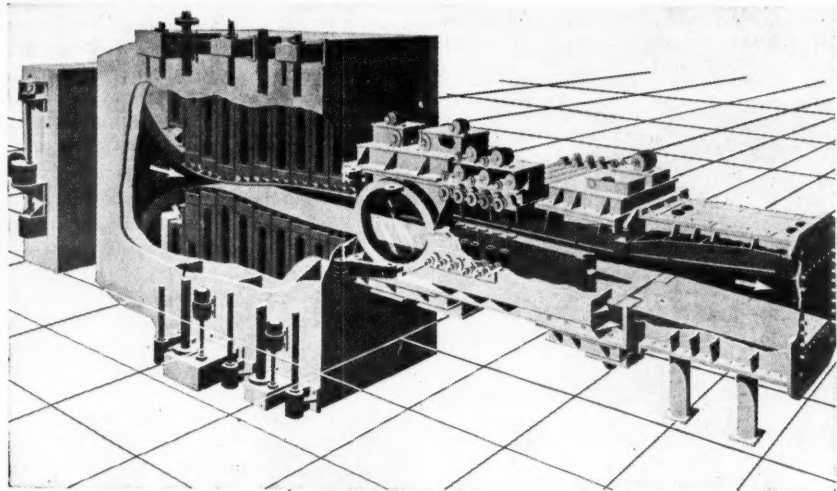
The F-86 is powered by a J-35 jet engine. Featuring swept-back wings and tail surfaces, it has a combat range of 1,000 miles.—Department of the Air Force and News Reports.

OCS Courses Doubled

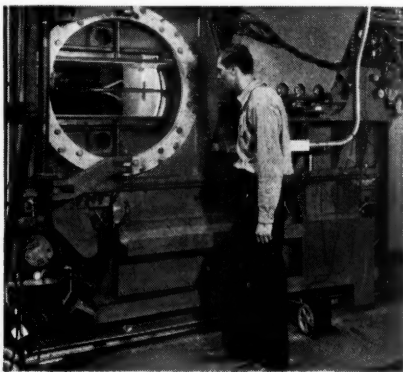
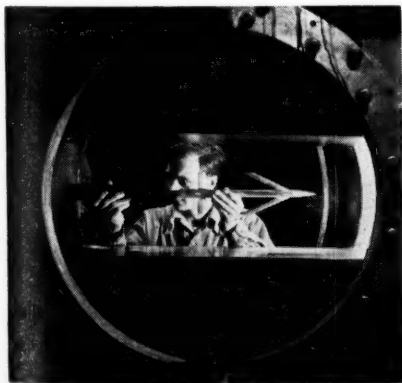
In order to help meet the demand for officers in the expanding Army, the number of Army Officer Candidate Courses has been doubled while the minimum age limit for attendance has been reduced.

Beginning in October, a new class was started each month at the School located at Fort Riley, Kansas.—Department of the Army.

Flexible Throat Wind Tunnel



Above, schematic diagram of the flexible nozzle supersonic wind tunnel, developed at Aberdeen Proving Grounds, Maryland, by the Ordnance Department, by which wind velocities four times the speed of sound (Mach. No. 4) may be achieved. Below, left, installing a guided missile model in the test section of the wind tunnel. Below, right, a workman observing a model while it is being subjected to tests at Mach. No. 4.—US Army and Ordnance Department photos.



Ordnance Tests

Navy Ordnancemen at the Naval Proving Grounds, Dahlgren, Va., test weapons under extreme climatic conditions, temperatures varying from 140 degrees above to



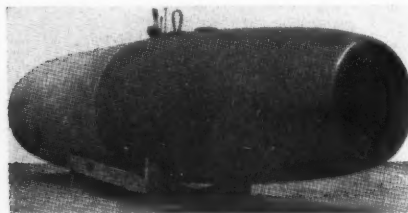
Preparing machine gun for cold test.

70 degrees below zero Fahrenheit being attainable in a special room designed for the experiments.

Weapons of all types up to five-inch guns are fired from the room. Observers and cameras record the action of the gun's mechanism during the firing.—US Navy photo.

Subsonic Ramjet

This large Marquardt C-30-1.0 subsonic ramjet was developed for the Air Force under supervision of Power Plant Labora-



Marquardt C-30-1.0 ramjet.

tory, Air Matériel Command, Wright Field.—*Aero Digest*.

Safer Rough-Sea Landings

An experimental flying boat with a new type of lengthened hull, to permit safer landings in rough sea, has made its first flight, the Glenn L. Martin Company has revealed. It was developed for the US Navy, and its new hull is expected to improve materially the performance of flying boats.

The most striking feature of the Martin XP5M-1, as it has been designated by the Navy, is the length of its afterbody. By extension of the hull bottom to the extreme end of the plane, a much longer base is provided between the main and the rear steps. This lessens pitching and bouncing in rough water, and also



Martin XP5M-1.—US Navy photo.

protects the tail surfaces from the waves by the added buoyancy in the stern.

Model tests show that this added length will reduce the normal time and distance required for takeoff, and also give a smoother takeoff. On landing, the point of the step touches first and noses the plane down gradually so that skipping-off will not occur.

It is powered with two Curtis Wright engines, each of which develops 2,700 horsepower. When completely developed it is expected to have a greater range than present flying boats of its class.—*Science News Letter*.

Medical Consultant Program

In 1948 the Office of The Surgeon General instituted a civilian consultant program which has far reaching effects directly on enlisted men, officers and dependents as regards the level of medical care afforded them, and directly on the morale of troops and medical officers. This program is divided into two phases; the overseas program, and the zone of interior program.

In the consultant program for the zone of interior highly qualified expert civilian consultants who are certified by the specialty boards in their various fields are selected to serve as consultants at Army residency training general hospitals and the other general hospitals and at the station hospitals, down to the smallest size, including those operating at the various Air Force fields and bases. These expert civilian consultants visit the hospitals on a regularly outlined schedule for the purpose of furthering the professional education of young Army doctors, and also to assist in the actual professional care of patients. This assures the Army of obtaining the highest level of medical care at all Army hospitals regardless of the apparent use or inexperience of assigned personnel. This program was originated because the acute shortage of medical officers does not allow the Medical Department to assign specialists in all categories to many places where they are actually needed.

The overseas program was designed to fill a similar but more pressing need because of the fact that Army hospitals overseas are located largely in occupied areas where there is no opportunity for civilian medical care and where local consultants are not available. In this program groups of four or five specialists in various fields of medicine and surgery were sent to the Far East Command and to the European Command at monthly inter-

vals. For the year 1948 this combined program furnished the following expert civilian consultants as overseas doctors:

General Surgery	12
Orthopedics	13
EENT	4
Ob. and Gyn.	4
Pediatrics	3
X-ray	1
Anesthesiology	1
Internal Medicine	18
Neuropsychiatry	14
Dermatology	4
Pathology	3

This program is to be continued in 1949 and amplified to include a monthly group to the Panama Canal Zone and another to the new Tripler General Hospital in Hawaii.

With regard to this program, line officers and commanders should understand that this program was designed to assure them of receiving the highest type of medical care which American medicine is able to provide for them, their enlisted men and dependents. Line officers have made a splendid contribution to this program and can continue to do so in the field of granting clearance to these consultant groups to enter overseas areas, in the giving of adequately high air priorities to assure that these groups can travel without delay to and in the overseas commands, and finally by aiding in securing transportation and billeting facilities in overseas areas where such things are difficult.

This consultant program has been an outstanding success from the standpoint not only of the visiting doctors but of all the overseas and zone of interior medical installations in the past year and it is anticipated that as the procedure becomes more established with usage the benefits will be even greater during 1949.—Office of the Surgeon General.

MISCELLANEOUS NOTES

Instruction Hours

Department of the Army Circular No. 217 authorized a reduction in the forty hours of instruction per week in the Army service schools. In courses running more than three months, reduction to thirty hours, not including study time, is permitted. For courses shorter than three months, a thirty-five hour week has been established.—*Armed Force.*

Industrial College Course

Special training courses in economic mobilization, conducted by the Industrial College of the Armed Forces, are being offered to 255 selected National Guard officers and the same number of Army Reserve officers during the current fiscal year. Seventeen two-week courses will be given in principal cities throughout the country. The Army has authorized attendance of fifteen Guard officers and fifteen Reserve officers for each course.—*Armed Force.*

5,000 Engines

Air Force contracts for nearly 5,000 aircraft engines which will cost approximately \$367,000,000 will be given to manufacturers during the current fiscal year ending 30 June 1949. Appropriations authorized for the purchase of aircraft and their component parts during the 1948-1949 fiscal period total about \$1,542,000,000, all of which is contingent upon the approval of the Secretary of Defense.—*Armed Force.*

Decommissioning Battleships

With the placing of the *USS Iowa* on the inactive list of ships, the *USS Missouri* remains as the only battleship on active service in the US Navy. The latter may also be decommissioned in order to release personnel and funds for the expansion of the Navy's air arm and anti-submarine program.—*News Report.*

Heavy Fire Sinks Nevada

The old battleship *Nevada*, survivor of two world wars and two atomic bombs, was sunk recently by the combined shelling, bombing and torpedoing of the Navy and Air Force. The old dreadnought, still radio-active from the Bikini atom bomb tests, rolled over and sank after torpedoes from Navy torpedo bombers smashed into her sides.—*The New York Times.*

Army Tests Vehicle Greases

A convoy of twelve 2½-ton Army trucks started from Aberdeen Proving Ground, Maryland, in August on "Operation Greaseball," a journey which is taking them through the blistering heat of California deserts and the bitter cold of an Alaskan winter.

The test run, which will cover about 20,000 miles and continues until the spring of 1949, is intended to prove in rugged practical operation, new automotive greases developed by the Army's Ordnance Department and the petroleum industry. Six greases will be tested on the trip, each type in two of the trucks.—Department of the Army.

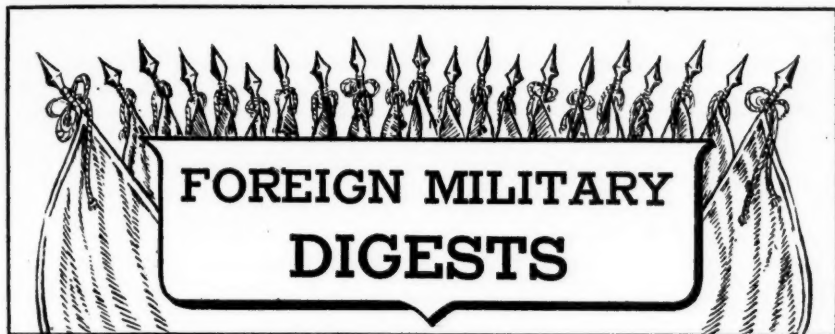
K-Ration Change

Too late for millions of World War II GI's, scientists at the University of California College of Agriculture have made a better tasting version of the dried fruit bar in the Army's K-ration.

They added chopped toasted almonds and honey or corn syrup. The result is said to be a 100 per cent more tasty bar.

GI fruit bars were about half raisins, with prunes, apples, figs, apricots and a little ground candied orange peel.

The new recipe contains: 20 parts Muscat raisins; 20 parts Calimyrna figs; 20 parts chopped toasted almonds; 20 parts honey or corn syrup; 15 parts dried apricots; and 5 parts candied orange peel.—*Science News Letter.*



An International General Staff

Digested by the **MILITARY REVIEW** from an article by Lieutenant Colonel
G. A. Rowan-Robinson in "The Fighting Forces" (Great Britain) June 1948.

THE Five Power Western Union marks clearly the beginning of a new era in the history of international relationships and consequently in the cause of collective security. This article will confine itself to the consideration of ways and means of setting up an International General Staff for controlling and organizing a Regional International Police Force of the type which, it is hoped, will emerge from the Western Union to safeguard the peace of Western Europe.

In order to avoid confusion it is necessary at the outset to define the conception of the terms "International Police Force" (hereafter referred to as IPF) and "International General Staff" as used in this article. The former is conceived as being a force with air, sea, and land components made up of representatives of all the states of the region concerned. It will consist, first, of a nucleus force, permanently embodied, recruited on a voluntary basis, and having its own headquarters and training areas; and, second, of contingents supplied as and when required by the various member nations of the region. By the term "International General Staff" is meant a joint Services staff with political, economic and other specialist advisers or branches attached,

which will in fact be the staff of the commander of the IPF, and will be referred to in this article as HQIPF. The words "General Staff" are used here to mean not simply the General Staff branches (as opposed to the Administrative Staff branches) of a headquarters staff, but in a fuller sense to embrace the whole staff.

As regards the general organization of the United Nations, it is envisaged that the main Security Council will have been split up into a number of Regional Security Councils, corresponding to the Permanent Executive Committee of the Western Union, each consisting of the Foreign Ministers, or their representatives, of the various member nations of the Region. In the same way, the Military Staff Committee will have been split up into regional committees, composed of representatives of the Joint Chiefs of Staff of the states of the region.

World War II Experience

Before considering in detail how HQIPF can best be formed and organized, it is worth while noting a few of the lessons which are to be learned from the experiences of the various inter-Allied staffs which operated so successfully during the recent war. It was General Eisenhower who was really responsible for evolving

and formulating the pattern on which, by the end of the war, almost all inter-Allied headquarters were organized. His main principle was that the staff should be an integrated one: that is to say, that instead of having a British and American officer each representing his own national interests, sharing or duplicating every staff appointment, there was only one man for each job, and he was chosen, irrespective of his nationality, merely for his fitness to do the particular job. Thus, for example, at Supreme Headquarters Allied Expeditionary Forces nearly all the key jobs on the Intelligence Staff were held by British officers by virtue of their greater practical experience in this particular line. In the same way the bulk of the administrative staff officers were American. This principle was applied throughout the headquarters, and all problems were regarded from an Allied rather than a national point of view. This was no easy thing to ask of a staff, and in the early days there were many cases of national rivalry and personal feuds between officers of the two nations which might well have assumed larger and more dangerous proportions had it not been for the personal influence of General Eisenhower, who infused into the staff the spirit which animated it and kept the whole machine working smoothly.

The principle of an integrated Allied staff differed sharply from that applied by Marshal Foch at his Supreme Headquarters in World War I, which though small, was entirely staffed by the French, the other Allies being represented only by liaison officers. It is in fact argued that an integrated staff is possible only between allies who speak the same language. Admittedly the removal of a language barrier makes things easier, but much more important is the ability to reconcile differences of temperament and national prejudices; and these were probably as great initially between the British and

the Americans as between any two nations. That such differences were successfully resolved should serve as an encouraging precedent to those who will be engaged in organizing an international general staff; for the differences between the two are not as great as might appear at first sight.

But if the evidence of the recent war is to serve as a guide, the chief danger of friction is likely to be found not within HQIPF itself but in its relationship with the staffs of the national contingents to which it will be giving orders. For relations between SHAEF and the two national headquarters, Twenty-first Army Group on the British side and the First (Sixth?) and Twelfth Army Groups on the American, were not always entirely amiable. This was very largely due to the fact that, as the Twenty-first Army Group and the two American army groups represented national rather than Allied interests, jealousies, mutual recriminations and misunderstandings between them and SHAEF naturally grew more readily and were harder to suppress. For, except in the early stages, the three headquarters were sited a long distance apart, and lack of personal contact between the three staffs inevitably made the task of mutual understanding much more difficult. The great lesson to be learned, then, from this is the vital necessity of maintaining the closest possible liaison—*personal* liaison—between the staff of HQIPF, and that of the various national headquarters, so that they all realize that they are fighting for a common cause and are members of an integrated international force rather than a number of separate national armies. That such a thing is a practical possibility and not just a pious hope was proved by General Eisenhower himself. The inter-Allied machine which he forged showed that it was capable of working efficiently even under conditions which imposed the very greatest strain on it. Equally well

Field Marshal Alexander's command in the Mediterranean serves as evidence of the fact; and in some ways his problems were even more complex than General Eisenhower's; for at one period during the Italian campaign he had troops of no fewer than fifteen different nationalities under him. Again it was his own personal influence which was largely responsible for inspiring them with a strong *esprit de corps* and welding them into a powerful fighting machine.

The Commander

The importance of the commander's influence and personality, therefore, cannot be too strongly stressed. The first step in the formation of an IPF should be the appointment of a commander, who should then be allowed to choose his principal subordinates and staff officers. So often in the past the commander has been the last person to be appointed to a force, and this has had unfortunate results. In the early life of SHAEF, for instance, the bulk of the staff has been in existence many months before its commander was appointed. This was in actual fact, unavoidable, as General Eisenhower could not be taken away from his command in the Mediterranean any earlier. But the result was that, when he did eventually arrive, he not unnaturally wanted to have as his chief staff officers men whom he had already worked with and whose capabilities he therefore knew; and this entailed getting rid of certain officers who had been filling these appointments for some time and whose only crime was that they were not known personally to their new commander. It will not, of course, be possible for the Commander of the IPF to fill his chief staff appointments with his own personal friends, or even with an undue proportion of officers of his own nationality. But the principle should be adhered to that the commander should have the opportunity either to ap-

point or to approve the appointment of his principal staff officers.

In addition to setting up his own headquarters the Commander of the IPF will have to appoint or approve the appointment of commanders of each of the Service headquarters operating under HQIPF. These headquarters will be referred to as Naval, Land and Air Headquarters respectively. These commanders will then set up their staffs, which will be organized on similar principles to those on which HQIPF is based. In general, it will be the role of HQIPF to decide broad questions of policy and to insure good coordination between the Services, while the three Service headquarters will work out the details. The relationship will, in fact, be very much the same as existed between Eisenhower's headquarters, on the one hand, and Ramsey's, Montgomery's and Leigh-Mallory's, on the other, during the assault phase of Operation "Overlord" (the assault on the Continent)—that is to say, before Eisenhower himself had taken over the command of the ground forces in addition to his role of Supreme Commander. A still closer analogy perhaps would be the organization of the German armed forces during the war, which consisted of an inter-Services headquarters (OKW), which controlled and coordinated the three Services headquarters, OKH (Army), OKM (Navy), and OKL (Air).

The Staff

After he has made these appointments the commander will explain the broad principles on which he wishes the staff to work, and will then leave the Chief of Staff to appoint the rest of the staff and organize all the details of its work and procedure. The appointments should be widely advertised, and applicants should have to appear before a selection board presided over, in the case of senior staff officers at any rate, by the Chief of Staff. The main qualifications required for appointments of second-grade officers (ma-

jors) and upwards (with the exception of a few of the specialist officers) should be:

1. A readiness to sink their national feelings and interests in an international cause.

2. Some experience of staff work in their own army.

3. Preferably some experience of active service conditions.

4. As regards linguistic qualifications, it will facilitate the staff work considerably if the members of the staff, at any rate the officers, speak the official language (in the case of Western Europe presumably either French or English). But a good staff officer who is a poor linguist is more valuable than the reverse. Therefore an applicant whose linguistic qualifications are below the prescribed level should not necessarily be turned down if he has other exceptional qualifications. It should be possible for him to reach the required standard after he has joined the staff, if he is prepared to give the time to study. At the outset he would have to do the more technical and detailed work through an interpreter and then gradually dispense with the latter's services as his knowledge of the language improved. Alternately, he could be sent on a six-month language course before joining the headquarters.

Those who are selected will then have to attend a special course, where they will study, among other things, the following:

1. The uniform staff procedure and staff duties, which will have previously been laid down by the Chief of Staff.

2. Technical terms and terminology in the official language.

3. Full details of the organization of the region and of the IPF in so far as they are likely to affect their work. In addition, as much as possible will be done to build up an *esprit de corps* and to impress on them the importance and full

significance of the work they will be doing.

The suggested organization of the Staff will follow closely the now generally accepted pattern of an inter-Services staff, based on the Army sub-divisions into General Staff branches and Administrative Staff branches. Working immediately under the Chief of Staff will be the Secretariat, which will be responsible for general co-ordination between the various branches and for insuring the smooth running of the headquarters as a whole.

Staff Branches

Only the General Staff branches will be discussed in this article. The first of these is the Plans Branch. It is envisaged that the Military Staff Committee of the region will be only a skeleton body and that it will use HQIPF as its own staff for the purpose of drawing up plans for its approval. The following hypothetical case illustrates how things might work in this respect. Relations between countries "A" and "B" have been getting increasingly strained. The Regional Security Council foresees that it may be necessary to send an international force to prevent an outbreak of hostilities. It asks the Military Staff Committee to produce the plan for launching the expedition. The latter decides, after consultation with the Commander of the IPF, whether it is a task for the nucleus force alone or whether a force supplemented by national contingents is required. But they are unlikely to reach any decision until they have first explored all the possible solutions. These will be supplied to them by the Plans Branch.

It will be the function of the Intelligence Branch to supply the Plans Branch with all the information they may require about the two countries "A" and "B."

The next branch of the staff to be considered is the Research Branch. This will be a relatively small branch, as it will not carry out the research itself, but

will merely instigate it or authorize it to be carried out. It will consist of representatives of the technical branches of the three Services and a few high-grade civilian scientists, who will act partly as advisers and partly as a form of liaison between the actual experimental establishments and the Services. In this way not only will the requirements of the Services be made known to the scientists, but the latest experiments of the scientists can be known to the Services, who would consider the possibility of having them adapted for their use. The scope and range of these experiments are, however, likely to be limited, as it is improbable that either the United Nations or any other world organization would consider decentralizing the control of atomic weapons or any experiments connected with their use.

The Operations Branch will, with the exception of its Air section, also be a fairly small branch. Once an operation has actually been launched, the Land and Naval sections of the Operations Branch of a headquarters remote from the actual scene of battle become little more than a machine for recording the progress of the battle. There was a noticeable tendency in the recent war on the part of Operations branches of higher formations to organize vast schemes, involving great expenditure of manpower, for getting back news of the progress of the operations. When this news did arrive all that they could do was to pass it on to some even higher formation or headquarters (who had in all probability themselves already received it through their own private channels), or prepare a summary for their commander. What invariably happened, however, was that the latter would return to his headquarters in the evening after touring the battle area or visiting some of his field formations and would be in a position to give to his staff a very much fuller, more authoritative and

more up-to-date picture of the operations than they could give to him. It is, of course, difficult to foresee how far from the battle area HQIPF will be. But, as was the practice of most commanders during the war, from a divisional commander upwards, the Commander of the IPF will almost certainly want to establish an advanced headquarters in or near the battle area, on which he himself will be based. This headquarters will consist of a small skeleton staff of key personnel from most of the main branches, headed probably by the Deputy Chief of Staff and the Chief or Deputy Chief of the Operations Branch.

The Air Section of the Operations Branch will, however, have to be considerably larger than that of the other two Service Sections. For it is likely that strategic (as opposed to tactical) bombing will be controlled from here rather than from Air Headquarters. Very close liaison with the Regional Economic Committee will have to be maintained, as the targets bombed will often be ones of economic rather than purely military value.

In the event of atomic weapons being used, there will have to be a special section of the Operations Branch, drawn from all three Services, with possibly scientists included, to direct their use. The control of these weapons will certainly not be delegated to headquarters lower than HQIPF.

We come now to the Training Branch. It is essential that the nucleus force be provided with its own training areas where it can set up its own training schools and establishments away from outside influences. These training establishments will be run by the three Service headquarters (with the exception of the Combined Operations Center, as explained below). But as one of the principal aims of the training will be to build up a strong and healthy *esprit de corps* in the Force, the IPF Commander will himself want to insure that this aim is being

achieved. Therefore, it will be the responsibility of the training staff at HQIPF to concern themselves with this aspect of the training.

Combined Training

For training in combined operations a special Combined Operations Center will be set up, which will be directly under HQIPF. Its role will be purely a training and experimental one. It will be responsible for coordinating the views of the three Service headquarters on all combined operational matters and for insuring that training in such matters is uniform in the three Services. It will have to organize training exercises in combined operations in which formations and units from all three Services take part. Finally, it will have its own experimental establishment where new tactics and new amphibious weapons and equipment can be given a trial. Thus the Training Branch of HQIPF will have to deal with the Naval, Land and Air Headquarters on matters of general training policy and with the Combined Operations Center on all matters affecting the joint training of all three Services.

The last of the main branches of the General Staff is the Liaison Branch. When the nucleus force of the IPF is operating alone, this branch will have little more to do than the normal liaison duties between higher and lower formations or between the advanced and main headquarters of the IPF. But as soon as the nucleus force is supplemented, each national contingent taking part in the operation will send a small mission to HQI-

PF, and it will be the responsibility of the Liaison staff to look after such missions and effect the necessary contacts between their members and the various branches of HQIPF. In addition, the Liaison Branch will control the pool of interpreters and translators that will inevitably be required both by the staff itself and by the missions attached to it.

Such, in brief, are the main General Staff branches which it is suggested HQIPF should have. At this stage any proposals are bound to be to a large extent hypothetical, and obviously no details can be filled in until the outlines become more defined. But since the signing of the Brussels Agreement the prospects of achieving some workable form of collective security, even if only on a small scale, have appeared much brighter. Once some form of regional organization has been set up, it should be possible to consider practically the formation of an IPF; and the first step in this direction should be to appoint a commander and authorize him to form a small planning staff. A great deal will depend on the choice of these pioneers and in particular on the commander himself, for it is the personality of the commander which infuses the spirit into the staff and molds it according to his lights. This is a task which calls for a man of outstanding ability and a team of expert staff officers who are sufficiently steadfast in purpose to overcome the host of obstacles that are certain to confront them in the initial stages. But if the will and the resolution are there, these can, and will, be overcome.

The Soviet Doctrine of War

Translated and digested by the **MILITARY REVIEW** from an article in "Bellona" (Polish magazine published in Great Britain) No. 2, 1948.

DETERMINATION of the Soviet doctrine of war from published sources is rather difficult. The Soviet press, generally speaking, avoids the publication of discussions of actual value relative to the operations of the higher military units, limiting itself to descriptions of tactical operations. In addition, one characteristic of all Soviet articles is their propagandistic content, which renders it difficult or impossible to discover the truth.

For these reasons, this study is based mainly on inferences drawn from carefully studied material, and to a lesser degree on published information. Material used includes statements by the former chief of the Soviet intelligence service in Austria, General Guliszvili, and articles and information from American, British, Russian, and Russian-satellite professional and political sources. In spite of its undeniable deficiencies, we believe the present study presents a fair picture of Soviet views on the conduct of military operations.

The basic Soviet conception of the conduct of military operations is "the doctrine of unified warfare." This is the well-known principle of "unification of objectives"; that is, the concentration of the efforts of all parts of the armed forces, as well as of all arms and means, on the attainment of the common objective. The consequence of this accepted principle is centralization of control over all of the armed forces in one person—Stalin—a principle also found in the German system during World War II.

Attack

According to the Soviet concept, the objective of military operations must be, above all, the enemy's rear areas, the conquest of which involves attacking with

all means—tactical, strategic, or political. Great possibilities in this connection are possessed by airborne armies, which land in the deepest rear areas and may be used not only to destroy important industrial centers and to seize strategic areas, but as the nucleus of a civilian army.

In addition to armies dropped by air, a large role is played by armored and motorized forces, supported by aviation, in the penetration of the enemy's rear areas. Operating in small but very mobile units, these forces are expected to break through the enemy defenses with great speed and join the troops dropped from the air. Liquidation of centers of resistance which have been by-passed and the re-opening of communications is the responsibility of the main body. Until such time as the main body attacks, the supply of the forward units may be accomplished by air supply. It is clear that the necessary conditions for action of this type against enemy rear areas are the crushing of his defense or a line of defense that is thinly held.

A third type of action against the enemy's rear areas is partisan action conducted by local elements, detachments left behind in the area, or forces dropped by air. This type of action is employed mainly for its political advantages or its demoralizing effect on the enemy. It is well to emphasize here the strong influence of political and propaganda factors on Soviet strategy, and sometimes even on Soviet tactics.

Offensive operations by the main body of forces should be characterized by detailed planning, seizure of a broad front, aggressive action, short but very powerful artillery preparations, and aerial bombing. Immediately after a fire preparation there should be powerful infan-

try attacks supported by armor and aviation. As soon as a fortified position is over-run, armored and motorized action should begin.

Defense

The defense should take the form of planned, tactical and strategic counterattacks launched when the defender gains the advantage over the attacker. The mission of the defense, therefore, is not so much to hold ground but to inflict losses on the attacker and to create favorable conditions for a counterattack.

Supporting Arms

If aviation is used, its first task is to gain air supremacy over the area of the intended operations, and second to support the ground forces. For these reasons, Soviet aviation is tactical aviation, intended for action over the battle field and subordinate to the army. There is a preponderance of fighter aircraft and fighter-bombers (*Stormoviks*) which are not suited for strategic operations. This does not mean that the Russians do not possess heavy bombers and strategic aviation, for they undeniably possess both. But up to the present time their strategic aviation has not been strong enough to play an important part in the event of a war.

The principal role of naval forces, up to recent times, has been the defense of the coastlines and cooperation with ground operations along the coast.

Particular weight is attached, in the Soviet concept, to military operations under winter conditions. The principal reason for this is that hard freezing and heavy snows give the Soviet forces an opportunity to partially compensate for their technical inferiority.

Ground Doctrine

It is obvious from this survey that the Soviet doctrine is one in which the decision develops from ground action. Not

only is the army organized with this in view, but so is aviation, which resembles the German organization.

On the basis of these principles, the Soviet armed forces are organized with the army playing the leading role. The air force is organized from the point of view of the requirements of the army, and to a certain extent so is the navy. Hence, the air and naval services constitute parts of the armed forces which are regarded, in a sense, as adjuncts of the Soviet Army.

The principal combat arm around which the army was organized was, until recently, the artillery. According to the Soviet concept, artillery played a decisive role on the field of battle. Armor has been regarded as a supporting arm for the infantry and for use in exploiting success. It is difficult to state whether this view has undergone any recent changes in view of greater motorization of the army.

As regards aviation, the greater part is organized around the fighter-bomber (*Stormovik*). It is used as the main weapon in the battle for air supremacy and in direct army support.

This survey should include Soviet views concerning the atomic bomb. It appears that the strategic significance of this new weapon is, in general, underestimated in the Soviet Union. Hence, the frequent voices from that side of the "iron curtain" proclaim that the dispersion of Soviet industry over the enormous expanses of two continents will rob the atomic bomb of a large part of its effectiveness in the event of a war against Soviet Russia. Such claims would have a certain validity if it were not for the fact that they completely overlook the weak development of Soviet communications which, once disrupted, would threaten Russia with national paralysis.

On the other hand, a cause of great anxiety to the Soviet Supreme Command is the fear that the United States pos-

sesses a secret for denaturing oil, or a means of depriving oil of its basic properties by atomic bombing of oil wells which are sunk in tidelands, as is the case with the majority of the Soviet wells. Hence, since any atomic bombing of the Caspian Sea would cause the Baku oil to lose its properties, so the Russians believe, Russia would be unable to carry on three-dimensional warfare because of lack of gasoline. These fears have resulted in intensive efforts to safeguard the Soviet oil wells against radio-activity.

In addition, the view is expressed in Soviet military circles that even if Russia is able to begin production of the atomic bomb on an industrial scale about 1951 the results may be similar to the situation in World War II when none of the belligerents attempted to use poison gas.

Future Operations

The first thing to be noted in the organization of the Soviet armed forces is the lack of an adequate strategic air force. To a large degree, this may seal the fate of Russia as regards her ability to reach an adversary in his own country. Lack of a powerful strategic air force sacrifices the advantage of air supremacy, which in turn is the condition necessary to swift and sustained offensive operations on land and sea. To be sure, strategic bombing may be conducted by long-range projectiles, and lack of air supremacy compensated for by local supremacy over the area of intended operations. The fifth column, so universally employed by Russia, can extend the reach of the Soviet armed forces to an enemy's rear areas by sabotage and diversion.

Long-range operations by armies dropped by air, of which the Soviet doctrine speaks, are problematical. It will be possible to carry on these operations only where air supremacy has been attained, or against an adversary who is very weak in air power.

A second point to be noted about the structure of the Soviet armed forces is their lack of a strong naval force, particularly aircraft. Nevertheless, since the Soviet naval forces are reported to include a large quantity of submarines, one should not regard too lightly their capacity for attacking sea communications.

The lack of a powerful strategic air force and the lack of a sufficiently powerful naval force are two factors which largely influence the ground warfare concept of Soviet doctrine. This is, strictly speaking, nothing more than a new and somewhat improved version of the German doctrine in World War II. Incidentally, one may note that the influence of the German military concept on the Russian concept has behind it a history of nearly 300 years.

The third characteristic trait of the Russian armed forces is that they are a typical expression of the doctrine of "mass warfare," which, on the one hand, is the transference of the dogmas of communism into the military field, and, on the other hand, the product of the peculiar Russian mentality. As a result, it appears that the Soviets attach greater importance to quantity than to quality. The outward manifestation of this concept is that the Red Army is largely a mass of infantry.

The fourth and last important deficiency of the Soviet armed forces is their lag, in comparison with the armed forces of the Western Powers, in all fields of creative thought, technique, organization, etc. According to many Anglo-Saxon experts, Soviet Russia is at least ten years behind the Western Nations, and at the present rapid rate of technical progress this is a serious deficiency.

These features of the Soviet armed forces—their attachment to ground operations, their mass concepts, and their lag behind the armed forces of the Western Nations—indicate that Soviet military

thought does not keep pace with new developments. It is difficult to imagine that the Russians are not aware of this state of affairs, but if they are, they do not express themselves openly. The masses are kept in blind belief of the perfection of all things Soviet. It is to be noted, however, that any shifting of military thought to new paths at present would not avail the Soviets very much. As long as they are not in a position to accomplish the mass production of atomic bombs and long-range projectiles, or display a powerful strategic air force and navy, all idea of new trends in military thought on their part will continue to be only fiction.

Assuming that Soviet officials are aware of their actual military possibilities, that

they are concealing their weakness but aggressively pursuing their political aims, and that they are making a great effort to overcome their deficiencies as soon as possible, the conclusion still will be the same: That at the present time, or during the years immediately ahead, Russia is and will be too weak for the successful development of an armed conflict on a global scale in spite of her military might on the ground. The greatest difficulty at the present time lies in her political activity. Politically she operates with her satellites as a single bloc, centrally controlled, and in accordance with a clearly defined plan. Only time will tell whether these political efforts will enable her to gain the necessary time to overcome her military deficiencies.

The Airplane in Naval Warfare

Translated and digested by the MILITARY REVIEW from an article by Captain Lepotier in "La Revue Maritime" (France) No. 22, February 1948.

DURING World War I the ship had its first experience with a new foe which was twice as fast as the newest surface destroyers. Performances of the first aircraft were so modest, however, that the only thought was to use them over enemy forces to ascertain the strength and intentions of the foe. However, in 1913, the Greek aviator, Mutusis, attempted for the first time in the history of naval warfare to drop airborne projectiles on a Turkish ship.

It seemed that a plane could easily destroy a ship by dropping projectiles which would reach it in a few seconds and at such an angle of impact that the armor of the sides would be useless, but the repeated experiences of 1914-1918 showed that this problem was not so easy to solve as it first appeared.

Historical Background

The first aerial bomb which struck a

ship was dropped by a German hydroplane on the English cruiser *Attentive* off the coast of Ostend on 5 September 1915, causing only slight damage. The British cruiser *Caroline* was the first ship sunk by aerial bombing, on 31 January 1916, and the destruction of the first German U-boat by Allied aviation dates back to 20 May 1917.

On 12 August 1915, a British *Short* airplane succeeded in taking off from the Gulf of Saros carrying a submarine torpedo. Finding a Turkish transport in the Sea of Marmara, it released its missile against the transport, thus carrying out the first torpedoing by plane.

World War I provided the opportunity for learning how difficult it was to hit a moving ship. Afterwards, the study of that problem was carried on actively in all countries.

Experiments resulted in the construc-

tion of bomb sights, whose theoretical accuracy was not always substantiated by actual results. An example of the inaccuracy of dropping bombs from horizontal flight was shown in the attacks conducted from 20 to 26 January 1915, against the *Goeben* at the time it ran aground at the entrance to the Dardanelles. The Allies flew over the ship 270 times, and of the 180 bombs released, only one hit its object, not damaging it seriously.

This inaccuracy was further confirmed by trials carried out on target ships between the two World Wars. During World War II, communiques of May 1940 from the British Admiralty announced that one ship had been missed in one single day by 150 bombs, and that from 8 to 10 May, of 1,500 bombs dropped, only twenty-three had struck ships. Only six of these bombs were dropped in horizontal flight. Later the British Prime Minister declared that for ten months 3,300 planes had tried to hit the *Scharnhorst*, the *Gneisenau* and the *Prinz Eugen* at Brest, dumping 4,000 tons of bombs, losing forty-three planes and 247 fliers, without succeeding in putting the ships out of commission. In 1943-1944 the Americans claimed that their Norden bomb-sight assured them precision of sixty meters from an altitude of 3,000 meters. Outside of these scientific features of the problem, one too often forgets about the influence on the reflexes of the aviator caused by the anti-aircraft defense *flak*, the wakes of tracer-projectiles, or the real or artificial clouds which may partially mask the objective.

From a ballistic standpoint, the great inaccuracy of dropping "while in horizontal flight" results from the curved trajectory traced by the bomb; from the variations in the speed of the plane, which is the result of necessary evasive movements; movement caused by wind; and the acceleration due to gravity. Hence, since 1918, the idea has been to cancel

out horizontal bombing deficiency by diving vertically toward the objective before releasing the bomb.

The study of that plan of action was resumed systematically by the Americans in 1927 and the Germans in 1933. The experiences of the latter terminated in the development of the *Stuka* planes.

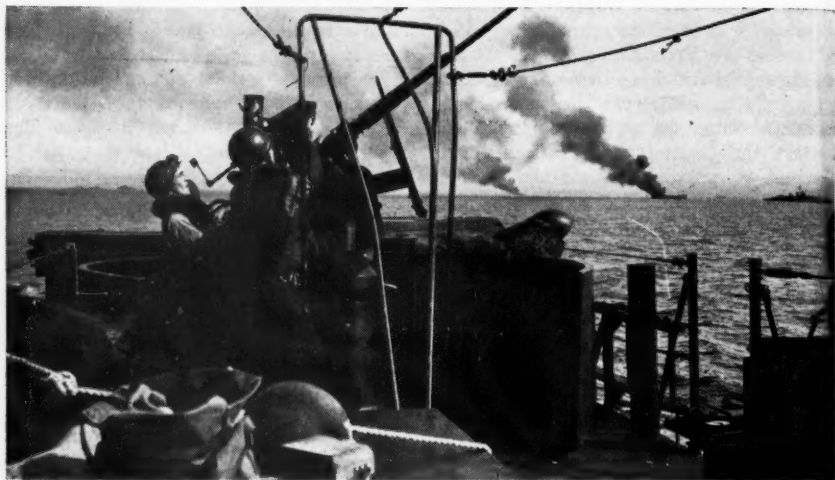
Planes Against Ships

The last month of 1941 saw, with the beginning of hostilities in the Pacific, the most stunning success of planes in an independent action against battleships. On 7 December 1941, a large number of planes attacked Pearl Harbor.

Shortly after the first machine-gunning of the air fields, another wave of planes, carrying heavy submarine torpedoes, skimmed the harbor, heading toward the line of immobile battleships; at the same time other planes began diving.

Results: *Oklahoma* capsized, its keel in the air; *Arizona* exploded, broken in two; *California* resting on the bottom on its larboard; *West Virginia* sunk by the stern; *Nevada*, which had weighed anchor and moved off, was aground in the channel; *Pennsylvania*, damaged in the dock; only the *Maryland* and the *Tennessee* remained afloat and suffered only slight damage. The light and auxiliary ships were also more or less seriously hit. More than 200 planes were destroyed on the ground; 3,077 officers and enlisted men were missing; all this at a price of only twenty-seven Japanese attacking planes.

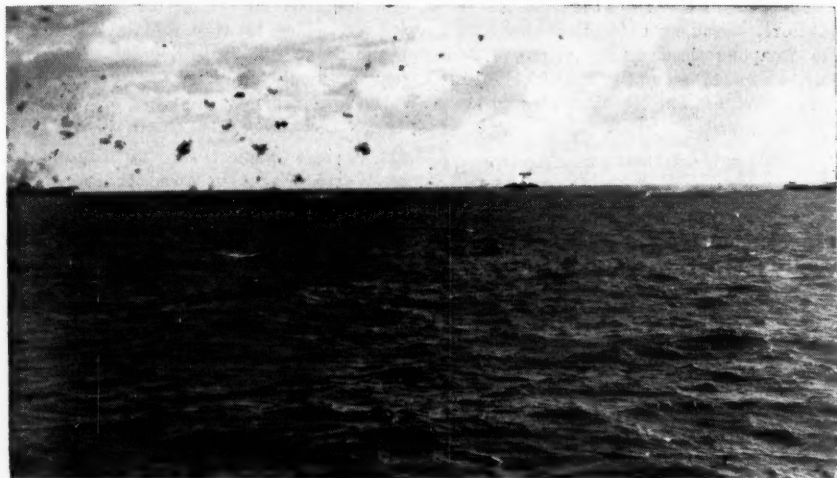
This experience at Pearl Harbor did not bring about the radical and immediate revolution of armament which seemed to be called for in so spectacular a manner. For each amazing success on the part of a new weapon, due credit must be accorded the surprise factor. In the case of *Taranto*, as in that of Pearl Harbor, that part was probably 90 per cent of the reason for success, particularly against the American squadron. It was repe-



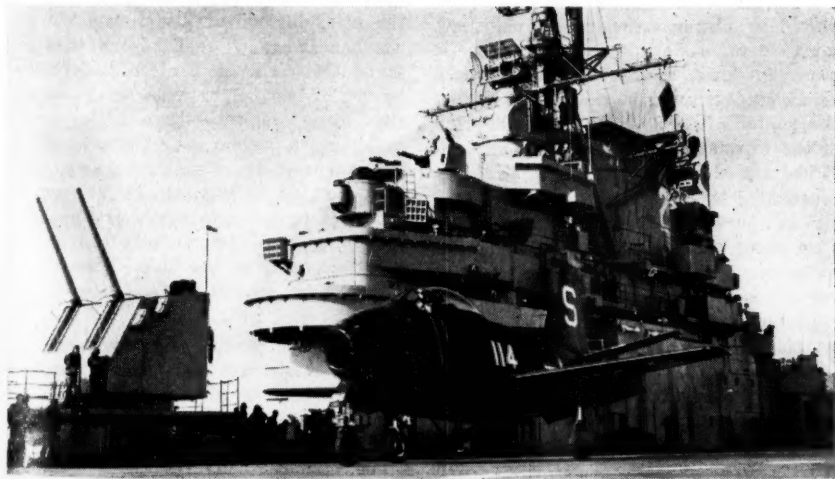
World War II affords abundant examples of action by planes against ships, and counteraction by ships against planes. Above, 20-mm gun crew aboard an LCI sights a Japanese bomber, Mindoro, December 1944; in the background, burning US ships hit by Jap planes.

Below, rocket-launchers mounted on US Navy landing craft.—US Navy photos.





In a desperate attempt to halt the American advance, the Japanese resorted to suicide attacks by planes against naval vessels; above, a burning twin-engine Jap plane, struck by heavy antiaircraft fire, plunges toward the sea. Below, the new striking power of naval aircraft; a FJ-1 "Fury" jet plane takes off from a US carrier, 1948.—US Navy photos.



tition of the attack on the Russian fleet at Port Arthur on 10 February 1904; the weapons used had changed, but in both cases it was an attack before a declaration of war on fleets which were not on guard.

Making Aerial Attacks Effective

In order to insure that airborne projectiles have an even greater chance of hitting their targets, it was necessary to conceive methods of guiding them up to the actual moment of striking the objective. The solution to this problem was found and carried out by the Germans in the form of soaring bombs guided by radio; and by the Japanese through the sacrifices of the *Kamikaze* pilots or *Bakas*.

The suicide *Kamikaze* planes and the human *Baka* struck the target often in the immense American armada used in the invasion of Okinawa. Admiral King said in his report that of eighty ships sunk or damaged in the course of these operations, the greater part were hit by suicide planes. Eleven aircraft carriers, two battleships, and sixteen destroyers were among the ships attacked.

In order to review all the tactics employed by planes in destroying ships, we must mention the laying of magnetic mines in ports, roadsteads and channels. This procedure was most effective during the winter of 1939-1940 and at the time of the Normandy invasion.

The extreme mobility of the plane has constituted by far the most essential factor in the element of tactical surprise. This has given it for some years almost complete invulnerability against naval or ground adversaries.

In our opinion, the fatal lag in the creation of efficient antiaircraft artillery was due to two reasons. First, all nations underestimated the possibilities of the airplane, and did not make, before 1940, the effort necessary to parry it effectively. The second error consisted in a desire to apply against the plane

the methods of firing on floating objectives. The duration of fire against a plane flying at 500 to 800 kilometers per hour is much too short for such methods to be applicable.

In regard to the characteristics of antiaircraft projectiles, the first years of World War II showed that ordinary bullets, even of 13.2-mm caliber, were only slightly effective against metal planes partially armored. This led to the search for a shell which would explode at the least shock. It was thus that the 20-mm *Oerlikon*, of Swiss origin, was adopted by all belligerents as the smallest caliber using an explosive projectile. Its efficiency, however, was limited to 2,000 meters, so the belligerents adopted as the next weapon the 40-mm *Bofors*, which a second neutral, Sweden, offered to them, and whose radius of action was 3,000 meters. These guns were, up to 1945, the two weapons used against the planes of that time which flew past the gunners less than 3,000 meters away.

Making it fatal for a plane to approach nearer than 3,000 meters from a ship is a desirable result to achieve, since the brief history of aerial attack methods has shown us that beyond that distance the airborne projectiles—ordinary bombs, flying bombs with fuse, submarine torpedoes, etc.—have little chance of hitting a mobile target which is free to maneuver. It is still necessary, however, to try to hit planes at greater distances in order to prevent them from remaining with impunity within range of action against the ship. That is the objective of long-range antiaircraft artillery.

In order to produce an economical volley of antiaircraft fire without using a large number of guns and gun mounts requiring a long and delicate process of manufacture and numerous trained personnel, the English invented the "rocket rack" and mounted it on their merchant

ships. It was a "bottle case" which could be turned around for direction, or inclined with respect to the horizontal plane. It contained twenty "self-propelled" projectiles, driven by attached rockets. The group of projectiles exploded when it had reached 2,000 meters, creating an extensive danger zone.

Finally, "aerial obstructions" were also created, some temporary, others permanent. The former were parachuted mines that, on bursting in the sky, liberated a charge suspended by a steel wire to a parachute. Every plane contacting that wire or the charge made the latter explode. The Japanese succeeded in placing several devices of that type in a single shell, with the small parachuted charges exploding automatically after falling for a certain time. As for the fixed obstructions, captive balloons pulled by the ships in convoy continued to be used up to the end of the war.

The air-naval war creates such tension on the part of the crews in the course of operations that the anti-aircraft organization of the land bases ordinarily assumes charge of the security of the ships during their periods of supply, rest and repairs. This organization must consist of detection networks and powerful means of fire.

Besides detection and fire strength, the bases should have aerial and submarine obstructions; or, better, underground shelters that can withstand the most powerful bombs. The usual aerial obstructions used up to now have been captive balloon barrages held in place by steel cables. They were especially efficient at night.

Aerial obstructions are not sufficient to insure complete immunity against air-borne torpedoes. For example, the planes used by the Axis in 1943 against the Allied convoys, notably in the roadstead of Algiers, parachuted torpedoes from high altitude which began operating on con-

tact with the water and began to execute irregular circles until they had encountered the hull of a ship.

Conclusions

Warfare on the sea now takes place above and below as well as on the surface of the water. The "balanced" air-naval forces should consist of a complete and harmoniously balanced series of the various weapons of combat, submarines, surface vessels and airplanes, each having superiority over similar weapons of the enemy. The relative value of these various pieces on the air-naval chessboard varies according to the development of the strategic and tactical situation. We should never hastily and definitely discard one of these pieces under the pretext that it has just fallen victim to technical surprise; by definition, surprise in all fields is a factor in action which is to be sought but which is not always available. In the technical field, its moral, tactical and technical effects are lessened with use. The structure of the various weapons adapts itself to the technique and the tactics of the others.

Only the aircraft carrier combines the strategic mobility of the base and the instantaneous tactical possibilities of a plane taking off as close as possible to its objective. It has been wrong to praise the superiority of islands as "unsinkable aircraft carriers" because they have revealed themselves indefensible against floating air-naval superiority.

Finally, in order to answer another argument, the present planes of aircraft carriers can advantageously engage in combat with planes coming from land bases. In the seven weeks preceding the Philippine landing, 1,900 Japanese "land" planes were shot down against 160 American aircraft carrier planes. On the other hand, at the time of the famous air-naval battle of Midway, not one Japanese ship was hit by the flying fortresses coming from their insular base.

An Air Policy for Brazil

Translated and digested by the **MILITARY REVIEW** from an article by Lieutenant Colonel Francisco Teixeira (Aviation) in "Revista do Clube de Aeronáutica" (Brazil) January 1948.

At the present time, aviation definitely occupies a fundamental place in human activity and is, therefore, directly connected with the development and defense of every nation.

Civil and military aviation advance and develop within the limits of their respective missions, namely, the carrying of progress and comfort to the most widely separated inhabitants of each country, and the maintenance of the peace which is necessary to humanity if it is to survive.

Brazil, with these facts in mind, needs to establish an air policy as soon as possible, and it must be based primarily on the requirements of national security and the advancement of transportation.

A national air policy, once established—and it is of the greatest importance that it should be established after ample debate—should be published and well understood by all those responsible for its execution. Obviously, the more persons there are who are convinced of the justice of an established air policy the greater will be the chances for its successful application.

Air Capabilities

In this connection, it would first be necessary to determine whether Brazil is really capable of becoming an air power and whether it would be proper for the policy to be pointed in that direction. It is our opinion that Brazil is capable of becoming an air power and that progress in that direction is not only possible but necessary for our national defense and our present and future development.

In a conference on 17 September 1945, Richard Smith, an American technician

under contract with the Brazilian government to organize the Aeronautical Technical Reserve Center, expressed the opinion that Brazil possesses great possibilities of becoming an independent air power as soon as she is able to establish her air policy.

In this address, Professor Smith divided the history of aeronautical development into three periods: the first period extended up to World War I; the second covered the period between the two World Wars; and the third period began after World War II.

It was the conviction of the speaker that countries such as Brazil, which began their development during the third period, will not suffer the disadvantages peculiar to those whose development began during the first or second period. These disadvantages are: first, these countries already have invested a great amount of capital in technical industries and laboratories which are no longer modern; and, secondly, their air lines are forced to employ obsolete war matériel. On the contrary, however, countries such as Brazil will have innumerable advantages in their favor.

Foreseeing the difficulties which Brazil would have in establishing an independent air policy, Professor Smith declared: "A new air power such as Brazil has the problem of being tempted by foreign salesmen into buying large quantities of war equipment, offered at truly attractive prices, with the argument that the low prices will wholly compensate for its being out of date. It is true that a few foreign planes and motors of proved quality must be used and adapted in the best way possible until Brazil is able to supply her own needs. I believe, however, that outside of this, Bra-

zil would do well not to acquire war equipment, even if it should be offered without cost. A policy of accepting this sort of matériel on the basis of its being cheap or free is a mistake for the following reasons:

"1. Brazil would find herself in possession of a great quantity of antiquated equipment that would be costly to maintain and expensive to operate.

"2. She would always be dependent on a foreign country for replacement parts which at times might be very costly; and,

"3. Such a situation would retard or even stand in the way of the independence of Brazilian industry, since it would temporarily obviate the necessity for depending on national production, giving the other nations, at present exhausted by the war, sufficient time to completely reconstruct their industries. The Brazilian industries then could not hold their own against this increased competition.

"Briefly, such a policy would be simply a policy of selling the future of Brazilian aviation as an independent producer of aircraft and operator of international air lines for a supply of obsolete military aircraft."

From the above, we realize that Professor Smith regards the establishment of an air policy which would shortly place us in the position of a country independently engaged in the production of aircraft as a possibility, but he also clearly indicates the obstacles we might meet and the mistaken courses which we might be tempted to pursue.

Thus it can be seen that Brazil, as soon as she realizes the possibilities of her air industrial development, can become an air power.

Brazil's Air Industry

It remains for us, therefore, to examine the structure of our aeronautical indus-

try, and what is required to protect and stimulate its development.

In an interesting study presented to the Second Brazilian Congress of Engineering and Industry held in Rio de Janeiro in November 1945, Engineer Luiz Felipe Marques enumerated the plants which exist in Brazil and their output.

Brazilian aircraft factories—ownership and annual production:

1. Fábrica do Galeão; owned by the Federal Government, Ministry of Aeronautics; \$1,500,000 production.

2. Lagôa Santa; mixed ownership, private and Federal Government; \$1,500,000 production.

3. Cia. Aeronáutica Paulista (CAP); private ownership; \$300,000 production.

4. Cia. Nacional de Navegação Aérea (CNA); operating under Law No. 4 648 of 2 September 1942 and of 8 November 1944; \$300,000 production.

5. Escritório Técnico de Aeronáutica (ETA); private ownership; \$300,000 production.

6. Cia. Brasileira Océan; private ownership; \$300,000 production.

Total: \$4,200,000 production.

Parts manufacturing plants:

7. Fábrica Nacional de Motores.

8. Fábrica de Hélices (wood propellers).

9. Fábrica de Equipamentos.

The development of these parts plants is dependent on the numbers of fuselages manufactured in accordance with the program.

These factories have already produced approximately 700 planes of different types, and all of them, as Engineer Marques stated, "fly correctly and have been used to train hundreds of pilots."

Past Policy

Let us next examine the policy upon which this industry has been formed and maintained.

The policy followed both before and since the creation of the Ministry of Aeronautics has been a series of appropriations for the purchase of certain types of planes. This policy, and more importantly the financing of the Companhia Nacional de Aviacao, has kept alive the young Brazilian aeronautical industry. We believe that this policy has not permitted natural development of the Brazilian aeronautical industry, for there is a lack of coordination and an uncertainty of orders. If we wish to adopt an air policy which will assure us the position of an air power capable of independently producing aircraft, we must give protection and incentive to the aeronautical industry which already exists in Brazil.

Future Development

It may be asked, then, just what would be the most suitable means of protection, and what would promote the development of our aeronautical industry?

Generally speaking, an industry depends on the existence of a market capable of absorbing its production. The national market for aircraft may be divided into two groups: the government and private individuals. Of these two groups, the government predominates as the greater buyer of national production and of imported matériel. As Marques very well stated, "the government buys military aircraft, civil planes for aero-clubs, and supports the air lines on the basis of mileage flown, which represents an amortization of the cost of, and interest on, the value of the plane."

The government being the biggest purchaser of aircraft, it is plainly clear that it should make its purchases on a previously determined plan, aimed spe-

cifically at developing our aeronautical industry. This plan, which should be worked out by a commission functioning within the Ministry of Aeronautics, would be based on the competition between the various national manufacturers in providing the types of planes to be purchased.

It is obvious that the aircraft industry could take care only of orders for certain types of aircraft, such as small private and training planes, those destined for aero-clubs, a few types of transport planes, and military planes for primary and basic training. Nevertheless, the application of this policy for a certain length of time would, naturally, encourage the aircraft industry to develop the facilities required to meet all of our aircraft needs.

For skeptics who doubt the success of such efforts, we need only point to Argentina, which created the Instituto Aerotecnico to encourage, coordinate, direct, and control its aeronautical industry and already has accomplished worthwhile results. Within the framework of such a policy there would be other projects to encourage aeronautical development, such as the establishment of an airways plan and the creation of a technical center. The latter would train the technicians needed by the growing industry, and centralize research on the most suitable types of planes.

Finally, it might be said that the necessity for the direction of our air policy toward making Brazil an air power capable of producing her own aircraft is a matter of national security, for modern war can be waged only by industrialized nations.

Basis of Air Policy

In summary, we believe that the national air policy should include the following fundamental points:

1. Development of the national aero-

nautical industry by an adequate plan.

2. Maintenance of a minimum military air force compatible with our economic means, but capable of rapid development in case of war.

3. Maintenance and stimulation of an

efficient national network of commercial air transportation.

4. Support of private aviation (touring and sports aviation).

5. Development of aeronautic research, and the training of technicians.

The Infantry of 1965

Digested by the MILITARY REVIEW from an article by P. H. H. Bryan in "The Army Quarterly" (Great Britain) January 1948.

THE main role of infantry in atomic warfare will be to put out of action the enemy atomic bombing bases.

The large-scale destructive value of atomic bombing by self-propelled projectiles will rule out the possibility of large motorized formations approaching the enemy in the style to which we have been accustomed in the past.

In atomic warfare the situation arises in which the nearer you are to the enemy, the safer you will be, as he can then no longer utilize his large-scale atomic weapons. "Close immediately with the enemy or perish" will be a sound military axiom of the 1960's and the only feasible method of obtaining the speed and surprise to deliver troops direct to the doorstep of the enemy will be by air.

The enemy atomic projectile launching sites will undoubtedly be the core of a strongly defended area. These sites will be immune from counter atom-bombing by being well underground. Such defended positions can only be taken by infantry on the ground. Tanks and armored vehicles cannot overcome natural and artificial obstacles of the sort to be expected in the defenses; they cannot penetrate underground defenses; they present too great an area to withstand atomic blast effects and their weight and bulk would

require a disproportional air fleet to convey them.

Future military forces will, then, consist predominantly of infantry, which will be entirely airborne. They will be called upon to fly direct from a home base at possibly 600 m.p.h. and land in or near the enemy launching sites. The sooner contact is made with the enemy, the safer they will be. There will be no interim period and no land lines of communication. No-man's-land will not be the area between the two opposing forces, instead it will be most of the rest of the earth—anywhere, in fact, where the enemy is not.

Infantry Organization

An air-landed, close-assault infantry operation on a strongpoint calls for precision in timing and teamwork. In such fast-moving warfare, command and control are exceedingly difficult by reason of the very qualities of concealability and agility that make infantry the best means of close assault. A man concealed from the enemy is invariably concealed from his own commander. The faster the tempo of an infantry advance, the greater the danger of loss of control and subsequent confusion. In comparison, the control of the movement of ships, airplanes and tanks is child's play.

The present infantry organization does not lend itself to fast moving, concealed warfare. The basic sub-unit now is the platoon—an officer-commanded group of some thirty men organized in three sections (squads). One of the lessons learned from World War II is that a group of thirty men cannot operate as a collective body effectively voice-controlled by one man. A platoon officer coming under heavy fire and taking cover behind a few stones or bricks invariably found he could see only two or three men similarly taking cover in the immediate vicinity. By shouting, he might have been able to make another four or five hear him. A couple more rushes forward to the next cover and the platoon commander found he had lost the major part of his men and was left virtually commanding about a section only.

The platoon of thirty men as a basic sub-unit is too large and unwieldy for present and future tactical conditions.

The largest collective body of men that can be personally directed and supervised under fast moving and concealed conditions is about ten. But whereas the platoon of three sections is, as we have seen, too large for the platoon commander to lead personally and control, it is also too small to warrant a separate officer-commanded platoon headquarters exercising indirect radio-telephone control, away from the sections. So we may anticipate, in future warfare, the organization of the platoon to be six sections, each of ten men commanded by a noncommissioned officer, controlled by radio-telephone by an officer platoon commander and his headquarters.

Thus it will be a section leaders' war, with the NCO as the literal "leader" of men and the officer as the controller.

Four such platoons, totalling some two hundred and fifty men, will constitute

a company. The number of sub-commands in a command is governed to a great extent by the maximum number of such sub-commands the commander can handle, having regard to quickness of movement, the volume of messages and reports coming over the air and the promptness with which tactical decisions have to be made. The past obsession of having three sub-commands cannot justify its continuance in the coming airborne infantry wars.

There will be four companies to the battalion, this number again being fixed on the basis of economy of control stages consistent with the amount of detail with which one brain can conveniently deal. The present rather top-heavy battalion headquarters company, with its motor transport, signals and heavy support weapons, will practically cease to exist.

The brigade of three battalions will be the basic formation. For this close-assault, high-speed form of war the pace will be too hot and time too limited to permit much centralization on the lines of our present divisional forces. Whatever supporting forces (if any) that may exist in the future, must be grouped at brigade level to permit speedy allocation when needed.

The division of the future will lose its role of being the basic formation, but will continue its existence as a vital stage of command. A divisional headquarters will control six brigades. The present number of three will be too few under the new conditions to warrant a separate tactical controlling organization. In the present and past this number has been the maximum possible for the divisional commander to cope with owing to the administrative problems of supply and transport, which were really his chief worries. The future di-

vision of six brigades, free of all the complexities and limitations of ground lines-of-communication, ground bases, and supply points rearwards will probably be far easier to handle than the old model.

The divisional staff will be comparatively scanty and will resemble the Advanced Divisional Headquarters of today. They will be the highest stage of command accompanying the forces into the initial stages of air-landed operation and probably will never be more than a few hundred yards from the main troops.

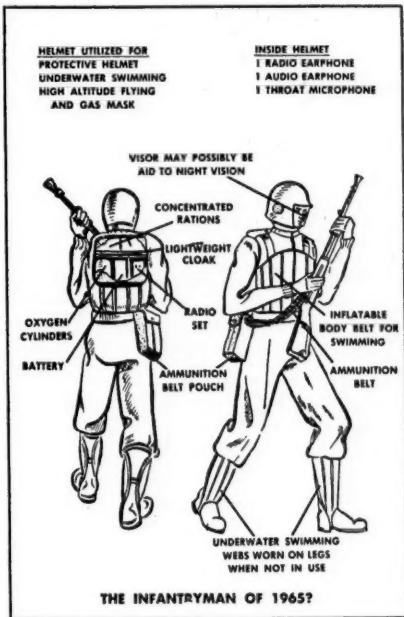
The Individual Soldier

The two most important qualities required of the 1965 infantryman (apart from the age-old military essential—courage) will be agility rather than endurance and the ability to fight in small isolated groups without the psychological encouragement of large numbers of comrades within view. Strongly fortified positions of considerable depth that can confidently be expected to surround enemy atomic launching sites will no doubt be encompassed by most obstacles that man and nature can achieve—wire, water, concrete emplacements, mine fields, cliffs, large underground passages are some of the difficulties he will encounter. The worst mine field can be flown over and the stiffest fortress can be crash-landed on, but such work requires speed and agility; powers of sustained marching will not be required.

The 1965 infantryman will be as familiar with the air vehicle as the truck is to his counterpart today. He will carry on his back a far lighter weight than he does now, and his equipment and clothing will be all that science can devise for him.

He will wear a helmet with an opening visor that will fulfill many functions.

It will be a protection against ordinary solid projectiles, blast and the peculiarly burning effects of atomic explosion. It will protect his head from the radioactivity which is the aftermath of atomic disintegration. When necessary, it will be capable of being air-tight and watertight, sealed against the collar of over-



all clothing and fed by a small oxygen cylinder carried in the pack, being used as a high-altitude mask in the possible event of a high-flying approach flight; also as an underwater swimming helmet for the "frogmen" variety of tactics. Water will cease to be an infantry obstacle, and in fact will provide additional cover.

The human ear and voice are in themselves completely inadequate means of

communication in concealed, fast-moving and extremely noisy warfare. A small wireless set, weighing a pound or two, with a range of two or three hundred yards is by no means an impossible anticipation. This range will be ample for two-way conversation between section leader and private and will abolish the greater part of the difficulties of tactical control of individual men. For it cannot be stressed too strongly and too often that it is the invisibility of men to the section leader, not the distance between them, that makes vocal control when under severe fire nearly impossible.

Radio-telephone will enable the section leader to converse with his men without lifted heads or raised voices. The men can tell their commander where they are, and he can plan and order the next move in detail.

Only one earphone in the helmet need be utilized for this. The other can be an audiophone, a mere amplifier of ordinary sound noises, which will serve a dual purpose. First, as an alternative means of communication in the event of wireless failure; second, to detect noises of enemy movement. This latter use is of particular advantage in close warfare.

As a forecast on less solid basis, we could hope for the visor of the helmet to provide night vision—even a few yards would suffice. Night is the greatest of all barriers to infantry movement. The side which first perfects and uses this device will fight against blind men.

In the soldier's pack will be carried: the lightweight wireless set and a very small oxygen cylinder; a light cloak which will serve primarily as a blanket; and two day's ration of the "K" type. The overall clothing will be treated chemically to protect the body from radio-activity.

It is not quite possible, at present,

to foresee to what extent atomic research will have benefited infantry small arms by 1965. The main characteristic of the atomic explosion is the lightness of weight of the missile in proportion to its destruction area. When employed by bomb-carrying planes, self-piloting projectiles and various forms of artillery, there is no complication of construction, as there is ample space in missiles of this sort for the intricate mechanism and full advantage of the "main characteristic" can be obtained. However, construction of a microscopic model the size of a small bullet is a vastly different thing, and presents obvious difficulties. Furthermore, increased destruction area of the infantryman's weapons is not required for close-assault, air-landed operations, in which his ambition is to close with the enemy. Weapons of limited destruction area which can be used without endangering the operator will still be an essential, and it seems to be indicated that the solid bullet and the hand-grenade will still be the infantryman's ammunition in 1965.

The NCO

As the section will be, tactically, the basic sub-unit, atomic warfare of the future will be very much a section-leaders' war.

The trend of land warfare during World War II revealed the picture of infantry battle as being, not battalions or brigades of men fighting within view of each other, but of a series of minor wars-within-wars, of small groups of men fighting isolated actions out of sight of other similar groups. This aspect of infantry tactics will be even more marked by 1965. Such conditions call for powers of considerable initiative and independence in the junior commanders of small groups.

In the past, NCOs have been selected

on the merits of qualities that were required for Nineteenth Century warfare conditions of small firepower and lack of concealment. The new section leader, with his independent command in the field, will still need to possess the virtue of unshakeability and to be a personal example of courage to his men. But, above all, he will have to be capable of making quick decisions.

Section leading will call for much proficiency in map reading and the ability to make minor military appreciations. It will be seen that a good measure of the responsibilities of the present-day platoon commander will fall upon the future section leader.

The rank of NCO in the future will necessitate a considerable increase of prestige and authority.

The Officer

The future junior infantry officer will be essentially a controller and not, in its literal sense, a leader. His tools of trade will be the microphone and the map, and, except in emergency, he will not personally take part in combat as a weapon operator. He will be selected on the basis of superior brains and deeper military knowledge, rather than for quick reflex actions and a daring disposition.

It must be emphasized again that above a certain level of command troops cannot be deprived of continuous control without losing cohesion. This level is that of the platoon commander (of six sections), and in this is revealed that the demarcation line between commissioned and noncommissioned rank represents the difference of non-combatant and truly combatant roles.

Company and platoon commanders will be the sole authority for all matters pertaining to their commands. This will eliminate much of the indetermination and

confusion which arises from having two masters, and will give the battalion officers a far more precise grip on the man in their charge.

The Base Fortress

The principle of "always operating from a secure base" cannot be neglected by atomic warfare infantrymen. Their base in the Home Country will be primarily an atomic-missile-proof layout, deep underground. Their airplanes will surface for taking-off in much the same way as aircraft on aircraft carriers are elevated to the flight deck. These bases will also be planned to resist invading airborne forces landing on or near them.

Such base fortresses will be previously stocked with several months' food, water and ammunition, and although their primary function is to provide a base for an offensive operation, they will collectively constitute a series of strongpoints for a purely defensive plan. Once serious atomic bombardment commences, all surface communication will inevitably be unusable. The base fortresses, scattered throughout the country, will provide oases of security amidst the wastes of desolation. They will, of course, serve as supply depots for the air-supply of troops, and in short, will be the infantryman's home, haven, garage and larder.

Conclusions

The Boer War was a cavalryman's war; World War I was to a great extent a gunner's war; and World War II was a tank war. Infantry has thus tended to be the Cinderella of the arms. But the pattern of strategy and tactics of atomic warfare will, of necessity, restore infantry to the pride of place in battle. Within the next two decades the overburdened, plodding private of the line, with his clumsy boots and cheap contractors' clothing, will have disappeared from the scene. In his place there will appear the fast-flying, lightly although

expensively burdened airborne soldier, equipped without stint with all that modern science can devise for him.

The atomic missile and the high-speed plane are not anticipations of the future, but present existing facts. No army has

ever suffered military reverse because of over-anticipation of the progressive technique of war, but history, especially recent history, is littered with the records of the disasters and defeats due to under-anticipation.

Initiation of Hostilities in Critical Situations

Translated and digested by the MILITARY REVIEW from an article by Major General Henry Peyron in "Ny Militär Tidskrift" (Sweden) No. 5, 1948.

How will Sweden meet an enemy attack? It is conceivable that at the time in question the nation's entire defense organization will have been alerted, and that total pre-planned defense measures will have been taken, with combat forces on the frontiers, coasts, and elsewhere, and all other defense means in place. In other words, the nation's preparedness measures would be complete at the time of the attack. This implies that security against surprise will have been achieved and that the hostile attack met with all the forces at our disposal. It could also mean that an attack would not occur, solely because of strong defense measures in being in this country.

Advance Mobilization

Total preparedness demands that the nation's entire defense forces be mobilized in advance of an enemy attack. It is, however, impossible to know definitely in advance when an attack will occur. Mobilization and initiating the measures connected with it must therefore be ordered on the basis of estimates of the possibilities of attack by a given power. Total preparedness may be prolonged, perhaps greatly prolonged. Prolonged preparedness is particularly trying and generates serious alterations in the nation's economy and life. The outlook of small nations

is such that its politicians contend that an early mobilization may provoke an aggressively disposed power and be taken as a *casus belli*. It is necessary for the political leaders of a small nation to understand the foreign policy of their country and not hesitate at total preparedness for war when a threat of war hangs over their nation. In the case of a great power, the situation is different; it is able to put countermeasures into effect at any time.

Partial Preparedness

A nation's preparedness may also be partial. Some forces may be organized for guard duty on frontiers, and other defense measures may be taken. Preparedness of this sort may give a certain degree of security against surprise, but it might also be observed that defense resources will be relatively weak and more divided than in the case of total preparedness. It may be noted further that sudden enemy attacks and operations (aviation and fifth-column) against military centers and communication networks are highly capable of making more difficult the mobilization of those defense forces which are not already in place, and in some cases make it impossible for the defense forces to engage the enemy according to previous plans.

In such a situation, therefore, operations are forced to follow other lines than when all forces are in place from the beginning. Unexpected factors and problems which have not been considered and provided for in advance are likely to be much more difficult to cope with than would be the case under total preparedness. On the military side, this problem is well understood, but it appears to be less commonly noted by politicians and the general public.

World War II Example

From Sweden's state of preparedness from 1940 to 1945, lessons may be learned regarding both the advantages and disadvantages of partial preparedness. One example may be cited. During the critical winter months of 1942, when a German attack was expected from Norway, a defense force was organized with about a division being assigned to Vermland. Surprise by the Germans was thus rendered impossible. On the other hand, a German attack could not have been met with the required defensive strength. A very strong force, whose operational plans had been prepared in advance, was intended for Vermland's defense, in the event of an enemy attack. Without doubt, the Germans would have made a strong effort to cut communications between Vermland and the rest of Sweden at the start. If this had been accomplished, transporting Swedish troops to Vermland would certainly have been delayed and concentrations jeopardized. Vermland's defense, in that event, would have had to be conducted by local and relatively weak forces, whose operations would have been entirely different from those planned for the large force designated to be sent there.

Danger of Surprise

Under normal conditions, it should be possible to receive advance warning of

an enemy attack. But in the acute situation which now exists in Europe, with large forces under arms, a nation with aggressive intentions, acting in accordance with the belief that it is best to forestall a threatened blow, will strike first before we are able to set our defense measures in operation. In such a case, we shall have to face all the perils that accompany surprise. The enemy's first efforts are to attack communication services and important military points. One of the results of this would be that our mobilization would be blocked. It may require a great deal of time for forces of any strength to be assembled. The situation may develop in which we shall be unable to move our forces to the intended fronts but will be forced to place them farther to the rear, thereby surrendering important and easily defended sectors of our terrain.

Regardless of how strong our will to resist or how firm our resolve, organizing our defense would be very difficult. Difficulties would increase in the same degree that we were not fully ready to meet the attack.

Does it seem likely that we will be fully prepared in the event of an enemy attack? Or is it more likely that we, at the critical moment, will have only part of our defense forces under arms? Can we afford to disregard the possibility of an enemy's attack overtaking us at a time when we are wholly unprepared?

Realistic Exercises

What will be the consequences? We must not permit ourselves to be misled by the belief that an attack is, of necessity, bound to come at a moment when we are in a situation that is favorable to us, namely, that of total preparedness. We must also count on an attack coming

when conditions are unfavorable to us. We must increase our ability to take care of ourselves under extremely difficult conditions. To a certain extent, exercises have been conducted along these lines, but it is desirable that they be on a large scale and realistic.

Certain exercises bearing on the probable fields of our operational activity are conducted, ordinarily, on the assumption that we will be totally prepared, with all fighting forces trained and ready for action in accordance with well studied and firmly established plans, and with all intended defense measures in operation. In other words, the initial situations for the operations are the most favorable imaginable. In addition, practically all exercises assume that the troops are organized and equipped in accordance with existing requirements.

Nevertheless, great importance should be attached to exercises conducted on

the supposition of unfavorable initial conditions such as partial preparedness or surprise attack. For example, it should be assumed that enemy aviation or airborne forces have either destroyed or occupied equipment centers; that the most important power stations have been bombed; that mobilization, concentration, etc., are delayed; and that, in certain cases, it is impossible to carry counter-measures out according to plan. In such exercises, much greater demands are made on the command and the troops than in those cases which we regard as normal. But by means of such exercises we may gain experience relative to transportation, equipment, troop command, the maintenance service, etc. We may also increase the ability of the various commands to make rapid decisions for taking care of themselves in unfavorable situations and for improvising in their respective fields of service.

Occupation and Resistance

Translated and digested by the **MILITARY REVIEW** from an article by Claude Postel in "Forces Aériennes Françaises" (France) No. 19, April 1948.

SUFFICIENT time has now elapsed since World War II to permit the publication of numerous articles in which civilians and military personnel express their individual conceptions of future warfare.

It is generally agreed that man's part in a future war will be subordinate to the technical, scientific and abstract aspects of such a conflict. But there is one question which seems to have been left in obscurity—the problem of occupation.

What will be the nature of an occupation in a future conflict? It is remarkable that the works of strategy published from 1918 to 1939 did not deal with this problem, but stressed battle maneuver. But the battle, itself, is nothing. It is only a

means, among others, to reach the ultimate end of every war: the occupation of enemy territory.

Future Occupations

The occupation of the future will be far from the minute detailed occupation which France underwent for five years, and which Germany is now experiencing. Future occupations will develop controls which will reduce the human relations between the occupier and the occupied.

Let us imagine a defeated country which has just surrendered all its arms, its industries having previously been reduced by atomic bombing. Rather than spread its detachments over sectors de-

stroyed by air attacks, the conqueror will install control centers in the most important sectors of the occupied country.

We may assume that these control centers will be no more than very large flying-bomb bases, perhaps equipped for nuclear warfare, with launching ramps sited in such a manner as to cover the entire occupied territory. The threat of such a network, thus prepared, will weigh heavily on the life of the occupied people, forbidding all overt activity. Thus, even the task of police agencies will become lighter, if they remain necessary.

If it is understood that a "vital center" is the place where the occupier may find the material necessary for his activity, and principally for his supplies of food, there is no need for the occupier to remain exclusively in the vital centers. If food made up of concentrated vitamins and calories becomes common, occupying armies could be increasingly free of the food problem. Control centers may then be located in regions which are the most favorable for the general observation of the vanquished nation, without too much concern for food supply.

Occupation Armies

Taking into account these ideas, it is possible to outline the composition of a control army of the future:

First, it will have a group of "operating bases," situated in a given geographic zone, permitting the reception and protection of the control forces. These bases will be organized defensively on the ground, and will be provided with air offensive power, probably "missiles."

Second, it will have a corps of police, particularly trained in guerrilla warfare and capable of swift, decisive action against every hostile move. As a result of these characteristics, individual weapons

must be efficient and light, while speed will require the greatest possible mobility. Transportation by air and parachute troops will be the means most generally employed.

Third, at carefully located points, there will be supply depots containing all supplies necessary to maintain troops. From these supply depots, air convoys will be dispatched to supply the operating bases and the police forces when the latter are out on missions.

Morale, Industry

Aside from these strictly military aspects, there will be problems of a more "human" nature that the occupying force will necessarily be called on to solve. First, the morale of the occupied nation will have to be considered. After a swift conquest, there will be millions of persons, terrorized and politically abandoned by their leaders, who will present a problem of morale for the conquerors. It is here that propaganda will play its part. An escape from the confusion of the occupation must be presented. There is still more need for the employment of propaganda if the victorious nation finds itself confronting a people united in their hostility.

The victorious nation will also face an industrial problem. Methods might change, but the goals of the conqueror remain the same. The vanquished must be prevented from constructing and manufacturing wealth for themselves and be compelled to produce for the conqueror.

Up to the end of World War II, satisfying the goals of the conqueror was simple. It was a question of making the occupied countries work. In this respect, Germany certainly attained perfection both in the adaptation of plants to her own use and in procuring forced labor.

Nazi propagandists first induced foreign workers to work in their own coun-

try in behalf of the army of occupation; then, availing themselves of Article 52 of the annex to the Fourth Geneva Convention, they resorted to pure and simple requisition of labor. At first requisitions were on a contract basis; eventually it was slavery.

Germany made use of 2,601,639 French workers, either in France, or in Germany as prisoners or forced workers.

Will it be the same in the future?

The present occupation of Germany, at least in its western part, reveals certain characteristics by which it is possible to imagine the industrial goals of a future occupation. Rather than manual slavery in the sense of construction, it will be an intellectual bondage in the sense of determining which manufacturing will be developed. The transplanting or deporting of scientists of the subjugated nation and placing upon them an obligation to invent, create, and manufacture for the conqueror, appears to be a profitable operation. The requisition of scientists might be followed later by large scale displacements of qualified workers, which would partially solve the problem of unemployment and would prevent political struggles from arising to annoy the occupier.

Resistance

To speak of the solution of problems of the occupier is to consider only one side of the question. There is another aspect, equally important: Can the conquered people react against the conqueror?

In a conference held at the General Staff School, General de Lattre de Tassigny divided into two parts the forces which could—in the event of a future conflict—oppose enemy troops. He distinguished “a modern fighting corps endowed with great mobility, entirely motorized and very probably airborne” from the ground forces intended for “the protec-

tion of the vulnerable zones.” The latter forces, in the advent of an attack, “could rally to the defense,” and it is necessary further that “the armament of these ground forces require only military weapons, generally light and easy to manufacture.”

A very important role is then vested in the civil population. From the guerrilla action employed by the nations which Germany overran, military leaders have concluded that a nation whose citizens are armed has become an important element in modern strategy. The remarkable fact is that henceforth such action will be considered in the laws of war, and will be defined in peacetime and carefully studied by military leaders. Douhet has said in describing ground fighting: “The classification into belligerents and non-belligerents can no longer hold good.”

Civilian-Soldier

Thus an entire people can be engaged in its own defense by fighting as well as by manufacturing. Clausewitz should be abandoned and replaced by Ludendorff, who has given a very current definition of peace: “It is the continuation of war by other means; it is the preparation for a new war.”

The civilian is, therefore, a fighter capable of becoming a real soldier, with or without uniform. It seems then that the concepts of open cities, civilian populations, and skirmishers will be revised and restricted. Even the protection conferred by the Red Cross runs the same risk of disappearing in cases of atomic or radio-guided bombing. As for retaliations, they will probably be carried out on a global basis; it would in fact be useless to retain the principle of hostages, since everyone will fight. The extension of reprisals will inevitably provoke the extension of their field of action. Then the entire population of towns may be treated as hostages and perhaps

destroyed, along with all their material, artistic, or spiritual resources.

Resistance Effectiveness

In view of this, the question may be asked: How efficient will be the opposition of thousands of individuals, armed by necessity with secondary material, and called into action as combatants in some social group such as a hamlet, borough, street, quarter, town or region?

One cannot judge in advance the results of popular action coordinated with the movements of a combat force. The value of local resistance will depend mainly on the spiritual force of the people engaged, and on the support that the people may receive from the combat force. One question remains: Is there any hope for a general national resistance movement within the interior of a vanquished country which is controlled under the conditions already stated?

During World War II, the action of the *maquis* was primarily developed against the foodstuffs, ammunition available, and lines of communication of the occupier.

The means employed by the *maquis* were the equivalent of those employed by the German troops.

Disparity of Arms

In a future conflict, it is probable that there will no longer be relative equality between the arms of the conqueror and those of the vanquished. While admitting that some armed groups may be able to arise in the midst of controlled territory, their equipment will always remain considerably inferior to that of the enemy.

Every national insurrection not combined with an offensive led by military forces equal to the control forces seems

doomed to failure. This is virtually a condemnation of isolated action by partisans. Would such action even have an objective? The objectives of the *maquis* in the last war were supplies and lines of communication used by the enemy. In regard to supplies, we have emphasized the future independence of control troops from the resources of the controlled country. As for lines of communication, if the French *maquis* were able to sabotage them effectively, and particularly the railways, it was by virtue of the nature of the objective itself, indefensible along its entire length. But as regards air communications, one wonders how clandestine ground forces could attack them since they would consist only of occasional stations powerfully defended.

For a nation placed in the same situation as France from 1940 to 1944, with a strong control army planted in the country and a total absence of outside military help, the armed action of guerrilla forces would seem futile.

However, intelligence or espionage remains a possibility. But the danger exists that in pursuance of intelligence activity the disappearance of a member of the enemy army may bring on severe reprisals.

Condemned even in its objective, it seems to me that preparation for popular armed action should be minimized in time of peace, and on the other hand there should be extensive individual training for intelligence purposes.

War brings about constant and regrettable degradation of man. In the next war, if it is the "push button" type that has been predicted, its element of initiative will be considerably reduced. In the event of defeat, the educated man will run the danger of having his mind enslaved.

Fighting in the Russian Sky

Translated and digested by the MILITARY REVIEW from an article by Lieutenant Colonel J. Accart in "Forces Aériennes Françaises" (France) No. 19, April 1948.

Preparations

ON 22 June 1941, Hitler ordered the invasion of Soviet territory. Since the autumn of 1940, when the loss of the battle for England had seemed inevitable, Hitler had made plans for operations on the Eastern Front. At the end of the year, numerous airports had been occupied by the German Air Forces in northern Norway, Finland, Poland, and Rumania. The 4th and the 8th Air Fleets had been prepared for use against the Ukraine at that time. The delay of three months in the Balkans and Crete permitted the Russians during the spring of 1941 to begin to replace the old *I. 15* and *I. 16* planes by some *Yak's* and *Lagg's* to which were added a number of attack *Stormov'ks*. In spite of that delay, numerous *K. 15*, *I. 16* and *P.C. 2s* suffered heavy losses from the German *Me 109 F's* which were by far more modern.

In June 1941, the *Luftwaffe* on the Eastern Front had approximately 3,000 planes: 1,000 long-range bombers, 400 dive bombers, 900 fighters (of which 750 were *Messerschmitt 109* and 150 *Messerschmitt 110*) and 700 reconnaissance and observation planes. These 3,000 planes represented two-thirds of the total strength of the *Luftwaffe*, three air fleets out of five.

Important Factors

This deployment of air forces may seem considerable for this period, but it is necessary to take into account several factors:

1. 3,000 planes distributed over a front 2,000 to 3,000 kilometers long was scarcely more than one plane per kilometer, whereas, for the French and Polish campaigns, the Germans had placed in line about ten planes per kilometer.

2. Because of the great distances separating the Eastern Front from the German bases, and the frequent shifts of landing fields, 500 transport planes were constantly required.

3. The Soviet Air Force, relatively impressive in numbers, offered bitter resistance.

4. The *Luftwaffe* had been prepared to enter into action in the spring and reach a decision with Russia in the summer months; it was not organized to withstand the rigors of a winter in Russia.

5. Hitler, short of replacement planes, was forced at the end of 1941 to withdraw the 2d Air Fleet from the Eastern Front and to transfer it to the Mediterranean Front.

Equipment on Hand

In the first months of the campaign and at those points where the Germans had numerical equality with the Soviet Air Force, the *Luftwaffe* completely dominated its opponent because it was superior in mobility as well as in combat experience, and its pilots had superior equipment.

At that time on the Eastern Front there were some *Heinkel III*, *Dornier 17*, *Junker 87* and *88*, with the *Junker 88* later replacing the *Dornier 17*. There was also the *Messerschmitt 109 F.*, which was less strongly armed than the *Messerschmitt 109 E*. Only the Soviet *Migg 3*, which was limited in number, possessed comparable performances. The first model of the *Yak* then in service, and the *Lagg*, were slightly inferior in performances.

The *I. 16*, with a speed of 480 kilometers per hour, was scarcely faster than the *Junker 88* bomber. The old *I. 15* and *I. 163*, which were first used in the Spanish War, were considerably slower.

To remedy that inferiority, the Soviet

Air Force tried in 1941 to obtain large numbers of *Hurricanes*, *Spitfires*, and *Airacobras*, because its leaders knew that without one-seat fighter planes of quality a modern air army is nothing.

The Soviet reconnaissance planes were twin-engine craft with a speed of around 400 kilometers per hour, conceived originally for bombing.

The Russians lagged in respect to fighter, bomber, and reconnaissance planes, but they had perfected a good doctrine of air support, using fighters and assault planes tactically to bomb and machine-gun targets. They were equally ahead in the use of rockets in attacks against tanks and ground objects, using techniques which were used by the Anglo-Saxons and the *Luftwaffe* only in the last year of the war.

The Russians needed several months to acquire experience in aerial warfare. It turned out that the *Luftwaffe* was not sufficiently strong to defeat Russia in those few months, because it had to fight on three fronts and to support 200 infantry divisions in the East, which were spread out over nearly 3,000 kilometers in the autumn of 1941.

The Campaign of 1941

In the first months, the German advance was rapid in Poland and in White Russia. The Russian Army was forced to evacuate Bessarabia and the Ukraine, and intrench itself behind the Dniester.

During that period, German aerial support was efficient: *Me 109*, *Ju 87*, and *Me 110*, *He 111* and *Ju 88* planes were used in the battle. These planes constantly harassed the retreating Russians who were well defended, however, by good light antiaircraft artillery. But the German aerial formations were not numerous enough to defend the long lines of communications, and the *Me 109* planes used in attack were no longer available to cover the German Army against the air attacks of the enemy.

The first raid of *Heinkel 111* planes against Moscow was made on 21 July 1941. To carry it out, the Germans brought from France one hundred *Heinkel 111s* as reinforcements. They succeeded in sending 200 bombers against the Russian capital, but because of powerful antiaircraft artillery, the Germans reduced the number of the bombers to fifty planes. Later they limited themselves to night bombing, but this had no more effect on the ground fighting than did the aerial attacks of the Russians on Berlin, East Prussia, Bucharest, or Ploesti.

In the middle of August, von Loeb intensified the attacks of his group of armies on Leningrad. Goering withdrew General von Richthofen's air corps from the Ukraine to support the *Wehrmacht* in the Leningrad sector.

When the first snow began to fall, the Germans had won some undeniable successes: 1. In the south, they were in Crimea; Dnepropetrovsk had been lost by the Russians and the crossing of the Dnieper had failed; Kiev was occupied and Kharkov menaced. 2. In the center, Smolensk was captured, Orel threatened and a double pincer offensive on Moscow was being prepared. 3. In the north, von Loeb declared that Leningrad would be taken at any price. In the extreme north, the German forces were held before Murmansk.

In October, the Germans gained other successes: in the south, they took Odessa, Taganrog, Mariupol, Stalino and Kharkov. The Ukraine was conquered. The *Luftwaffe* was within flying range of the Caucasus. In the center, Bryansk, Orel, and Viasna were evacuated by the Russians with Kursk, Tula, and Moscow menaced.

All these successes had been costly. The German air forces were reduced from 3,000 to 2,000 planes and were exhausted by three months of unceasing activity at the rate of 1,500 to 2,000 sorties per day.

The Russian Winter

This was the time that Hitler chose to

launch his autumn assault against Moscow. By collecting planes from all sectors, the German High Command mustered a total of 1,500 planes, but had no reserve. The attack was launched in the snow, with a cover of low broken clouds. The cold, already rigorous, increased daily. But the *Luftwaffe* made an uninterrupted effort over Moscow against strong anti-aircraft forces in October and November. That effort was not successful; the weather favored the Russians.

Toward the end of October, the Red Army passed to the offensive and retook the territory in the Tula and Kalinin sectors. For the first time the *Luftwaffe* had to evacuate advance territory. At Rostov, the Germans took the city, but were thrown back a week later and forced to retreat without air protection.

On 8 December 1941, a communique from Berlin announced the end of operations immediately because of the winter, and several days later Hitler took command of the Eastern Front from von Brauchitsch.

But the Russians had no intention of suspending operations. They soon regained the key positions of the Moscow Front, and progressed into the Smolensk sector. They advanced also in the Ukraine, reconquering the Kerch peninsula and encircled for a while the 16th German Army south of Lake Ilmen.

For the first time in two and a half years, the *Luftwaffe* was forced to go on the defensive. Its 1,700 planes on the Eastern Front were no longer sufficient to cover the troops in retreat. There were no reserve units, and the need for rest was widespread.

Spring and Summer, 1942

The spring of 1942 was crucial for the *Luftwaffe*. In Russia, the Reds made rest impossible. On the Western Front, it was necessary to leave 50 per cent of the twin-engine fighters, *Me 110* and *210*, to en-

gage the British Bomber Command. Increased activity in the Mediterranean Theater necessitated sending Kesselring's fleet to Sicily and Southern Italy. Only a third of the German fighters were at the Eastern Front at the opening of the spring campaign. This weakness was to be a decisive factor in the operations.

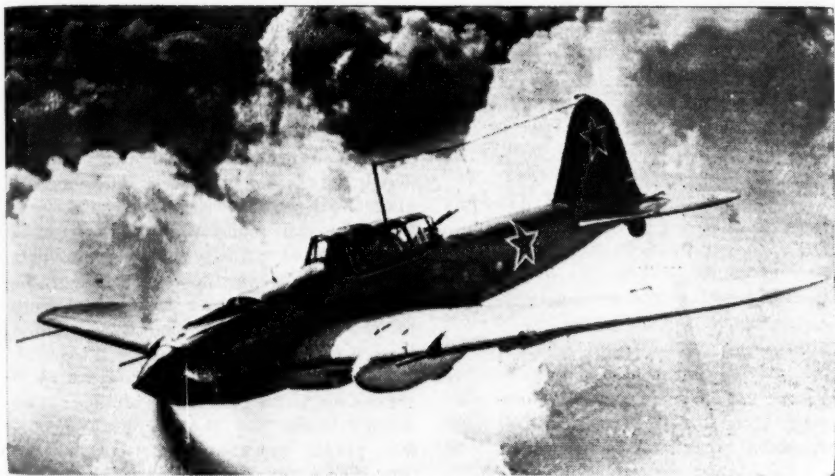
Nevertheless, the *Luftwaffe* prepared for an offensive at Stalingrad and in Caucasia. It could assemble only 2,000 to 2,500 planes with 25 per cent reserves, and many of its experienced crews had been lost.

To offset its weakness in fighters, the German Air High Command took two measures: they replaced escorted bombing by day with night bombing, and they abandoned air cover in order to use their fighters in attacks. The *Messerschmitt 109s* and *110s* joined the *Junker 88s* in ground attacks. Some excellent results were obtained in this mission, but the morale of ground troops suffered more and more from the lack of fighter cover.

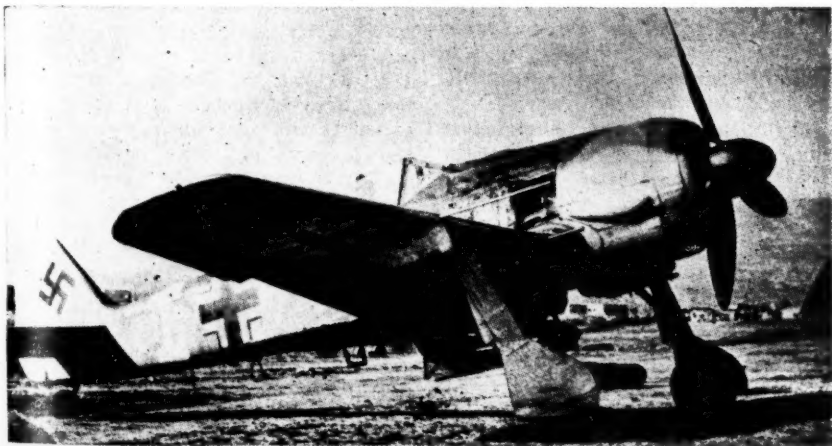
The Russian Air Force, on the contrary, was making constant progress: most of the old *I. 15s* and *I. 16s* had been replaced, and it had a large number of *Yaks*, *Laggs*, *Miggs*, attack *Stormoviks*, *Hurricanes*, *P. 40s*, *Airacobras*, and American *Boston* bombers. They received also some improved *Yaks*, driven by a 1,300 horsepower motor and armed with heavy 12.7-mm machine guns, a 20-mm cannon firing through the propeller hub, and six rockets or two bombs.

In May 1942, the Soviet Army attacked in the Kharkov sector. But the Germans counterattacked, and resumed their advance toward the southeast. Soon, however, prolonged and unforeseen resistance absorbed an important part of the air forces destined to sustain the German offensive on the Don; Sevastopol resisted all the German blows and thus immobilized 600 German planes which flew nearly a thousand sorties per day,

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When Germany launched her offensive against the Soviet Union in 1941, the IL-2 "Stormovik," an armored attack plane, shown above, was among the aircraft the Russians used against the German *Luftwaffe*. At that time, and during the following years as German air power declined, the Germans relied heavily on the Fw 190 fighter-bomber, below.



principally in attack missions. The joint offensive started badly in spite of the Russian setback at Kharkov; behind the 1,500 planes on the line, there were practically no reserves and the length of the lines of communication rendered the supply problems difficult. More and more transport planes were necessary, and there were fewer and fewer of them available.

On the other hand, in the north it was necessary to use 100 to 150 *Heinkel 177* and *Junker 88* bombers to attack allied maritime convoys which used the ice-free route to Murmansk in supplying the Russians.

Efforts of the German bombers, dispersed along the Russian lines of communication, were ineffective. The German army continued its advance, but often without air support. In September, Stalingrad was surrounded on three sides, but the thousand planes used against the city would have helped open the way for the ground troops advancing on the Caucasian oil fields.

Everywhere the Russians had air superiority, particularly at Leningrad and Moscow. The Germans needed reinforcements, but they could not draw them from the other fronts. Of the 2,500 planes in use at the beginning of the summer, 1942, only 1,500 remained.

The Russians now counterattacked at Stalingrad. Advance German air fields had to be abandoned before the Red attack. *Messerschmitt 109* and *Junker 87* units, thrown back 150 kilometers from Stalingrad, no longer were able to intervene in the ground fighting. Von Paulus' 6th Army was cut off. The *Luftwaffe* assembled a relief transport fleet consisting of *Focke-Wulf 200*, *Junker 86*, *Heinkel 177* and some *Junker 52* planes. Due to bad weather and no escort planes, only part of the encircled army was saved by air and at a cost of nearly a thousand planes.

Henceforth the *Luftwaffe* was definitely on the defensive. It was not to fight the Russians again except to conserve its few planes. By the end of 1942, the Russian Air Force had achieved air superiority over the Germans in all sectors.

The Crucial Year—1943

All the available planes did not prevent the Stalingrad defeat in February 1943. At that time the air defense of Germany had priority over air support for the armies. Seventy per cent of the fighters were allotted to that defense to the detriment of the Russian and Mediterranean fronts. In 1943 and 1944, the German air situation in Russia became even more grave. Old biplanes were even utilized, but the number of German planes never reached more than 2,000. The Russian Air Army, meanwhile, was 10,000 to 15,000 planes strong by the beginning of 1943, for a ratio of six to one. Frequently the local ratio was ten to one. Moreover, the Russian matériel was entirely modern, and the defensive attitude of the German forces reduced their initiative.

By the beginning of 1943, German air forces deployed on the Eastern Front consisted of: 1. 450 fighters, mostly *Messerschmitt 109s*, with some *Focke-Wulf 190s*, to cover the German airports and army, to escort bombers, to attack ground objectives with bombs and automatic arms, and to carry out some reconnaissance flights; 2. Less than 300 non-specialized bombers, the greater part consisting of *Heinkel 111s* and *Junker 88s*, often used for transport duty by day and night, and in reconnaissance; 3. 300 *Stukas*, *Junker 87* and *Focke-Wulf 189* reconnaissance planes used in attack missions like the *Henschel 129*.

A few of the tactical reconnaissance planes were frequently used as support bombers. The *Junker 87* and *88*, as well as the *Messerschmitt 110*, which were used as antitank planes, were armed with

cannons up to 50-mm caliber. The defense against tanks would have been more efficient if Germany had armed them with a greater number of 30-mm cannons.

At the beginning of 1943, however, the *Luftwaffe* undertook a big job of transporting the wounded and supplies of the retreating columns, but the Russian columns were no longer bombed. In the extreme north, about 200 planes used to attack convoys were withdrawn and transferred to the Mediterranean. Reconnaissance in the Arctic was executed by four-motor *Focke-Wulf 200*, *Blohm*, and *Voos 138* and *Junker 88* hydroplanes, all equipped with radar. A dozen torpedo-carrying *Heinkel 115s* remained available, with 30 *Junker 87*, used to support troops from the Murmansk front and to bomb the railway of Murmansk to Leningrad. In the Black Sea, the Axis convoys were poorly protected by Rumanian and Bulgarian units against Russian torpedo attacks. In the Donetz basin, however, the *Luftwaffe* maintained advanced bases and in March 1943 supported the German counterattack which retook Kharkov.

About 500 German planes were then concentrated in the Crimea and the Kuban, where they were exposed to incessant Russian attacks. That number reached 600 in May when the Germans executed an average of 400 sorties per day. Then all their resources were united at the north and the south of the Kursk salient, on the Orel and Issum fronts. At the same time, the *Luftwaffe* created a night bombing group in response to the Russian bombing which disturbed its concentrations in the Kursk region. A hundred twin-engine planes were used at night to attack the rear areas of the Reds; Gorki, 400 kilometers to the east of Moscow, was bombed first; then the rubber plants at Yaroslav, 250 kilometers to the northeast of the capital; the oil refineries in Saratov; the gasoline depots of

Astrakhan; the Russian airdromes, the railway centers and the highway network leading to Kursk.

During the last week of July, the *Luftwaffe* made a last and exhaustive effort to sustain the German offensive in the Bievgorod sector. It flew up to 3,000 sorties per day. But the Russian Air Force flew as many sorties and continued in equal numbers. At the end of several days of combat, the number of sorties by the Nazi planes fell to 1,500, and the *Luftwaffe* was reduced to the defensive. Then the Russians counterattacked Orel on the Donetz front, which was defended by the Rumanian and Hungarian Air Forces, while the Germans struggled in August to stop the Russian progress with a thousand sorties per day, which they succeeded in keeping up for a week with great difficulty.

Retreat from Russia

From that moment, the battle for Russia was definitely lost. The German Air Forces on the Eastern Front only comprised 1,500 planes, whose crews needed relief. In the autumn of 1943, Smolensk fell and the Germans fell back on the Dnieper line. The worst was foreseen: the supply depots and the repair shops for the *Luftwaffe* were sent to Poland. The Dnieper line itself could not be held, and the Russians soon overran it without encountering air opposition.

From Kiev to the Baltic, no more than 500 German planes were left on a front of 1,200 kilometers. Air reconnaissance was insufficient. Bombers had to provide supplies by air for the outflanked ground units for weeks, and even months at times. Nevertheless, air formations held their advanced bases as long as possible under the constant menace of being encircled.

In June 1944, the invasion of Normandy brought about an immediate reduction of 25 per cent in German fighters on the Eastern Front, and the Russian offensive

was launched on 22 June. The offensive began in Finland against Viborg, where a hundred or so Finnish and German planes, half of which were taken from the Vitebsk front, had to fight off a thousand Russian sorties per day. Soon the burden became even more crushing; the Reds executed 10,000 sorties a day to support the advance on Orcha and Mogilev.

The Red Army extended its offensive from the Baltic States to the Carpathian Mountains. In a month it advanced in some areas more than 500 kilometers. The *Luftwaffe* was incapable of checking that movement, although it was reinforced by a hundred *Focke-Wulf 190* fighters and fighter-bombers taken from the Italian and French fronts in July. The German air forces played a weak role in the slight defensive success of

the Germans in East Prussia and along the Vistula.

In October 1944, the German air situation in the East was desperate. The Russian Army launched the East Prussian attack, and pushed on to Budapest and Belgrade. There was no longer an Eastern Air Front, but only the air defense front of Germany.

Thus ended, in the German sky, an air campaign to which the German Air Force, a force essentially tactical, was particularly well adapted. But the campaign was too long and too severe. In more than three years of uninterrupted operations, the *Luftwaffe* was used against Russian air forces which were constantly increasing. And finally it collapsed because it did not have available the resources and the reserves comparable to Russian air power.

The Supply and Training of Army Officers

Digested by the MILITARY REVIEW from an article by Major General J. E. C. McCandlish in the "Journal of the Royal United Service Institution" (Great Britain) February 1948.

EACH Service has its own special problems. That which affects the Army to a much greater extent than the other two Services is the treatment of what we are calling the National Service officer, i.e., the officer given a commission during his fixed term of National Service—twelve months with the Colors for those called up from January 1949.

The Army has to consider four main types: the Regular or career officer; the Regular officer with a short service commission; the National Service officer; and the officer in the Reserve Army—most of these last will be in the Territorial Army when the new National Service Act is in operation.

The Regular Officer

For the Regular officer the basis of all our planning is the Royal Military

Academy, Sandhurst, which opened at the beginning of this year. There are two other sources of entry which we consider equally important, though they will provide only a small portion of the total intake, namely, entry from the Universities, i.e., after having taken a degree, and entry from the ranks, i.e., those soldiers (whether Regulars or National Service men) who prove themselves qualified during their time as other ranks and yet are too old to go from the ranks to Sandhurst.

The Royal Military Academy

The cadet goes to Sandhurst between the ages of eighteen and a half and nineteen and a half, because the course there is of eighteen months duration and we aim to have the young officer commissioned between twenty and twenty-

one. The object of the teaching there is:

(a) To develop the cadet's character and powers of leadership, and to instill in him a high standard of individual and collective discipline.

(b) To give the cadet an understanding of the art of command, and the means whereby a high morale can be achieved and sustained.

(c) To show the cadet how to keep himself and those under his command mentally alert and physically fit.

(d) To instill in the cadet an enthusiasm sufficient to insure his further unaided study of military subjects and general world affairs.

There are two main sources of supply—direct from civil life and from the ranks. In the former case, after pre-service cadet training, a candidate takes the Civil Service Commissioners' Examination, which is common to the three Services. The object of this examination is to eliminate the candidate who is below the standard of School Certificate plus one year's education.

Selection Board

The candidate who has had his medical examination before taking the Civil Service Commissioners' Examination, and is successful at the latter, then goes through the RMA Sandhurst Selection Board. This is a board on the model of the War Office Selection Board—its object is to reject the candidate who has not the necessary attributes of character and leadership to make an officer. Candidates spend three days at this Selection Board. Up to the present 62 per cent of candidates reaching the Selection Board from the Civil Service examination have been selected as suitable for Sandhurst. Those who pass this Board are then called up for service in the ranks. The date of their call-up is fixed to insure that they have at least four months service in the ranks before the Sandhurst half-yearly entry.

Parallel to entry after the CSC Examination we have the entry from the ranks. Any soldier can apply, or can be picked out by his Commanding Officer, as a candidate for Sandhurst, provided he is in the same age zone as candidates from the CSC Examination. The soldier who is recommended for Sandhurst training then goes through the same Selection Board, being tested in the same way as the boy from school, except that he is given an educational test with the object of finding out whether he has the necessary educational background to absorb the instruction given at Sandhurst. The candidates from the ranks whom we have found suitable have ranged from 47 per cent in the first entry (which included a number who would have taken a written examination had there been one) to 33 per cent in the more recent intakes.

Training After RMAS

The route from Sandhurst in the case of certain Arms is direct to active Army units, but most of the more technical Arms send the young officer, immediately after commissioning, on courses to complete his education in his own Arm before he joins a unit.

A proportion of the newly commissioned officers in each Arm (including eventually 100 per cent in Royal Engineer and Royal Electrical and Mechanical Engineers) will go to the Military College of Science to undergo a long course at the end of which they can obtain a B.Sc. degree from London University.

The career, as far as higher education is concerned, of the officer who is destined for high command or staff employment is via the Staff College, Joint Services Staff College and the Imperial Defence College.

The National Service Officer

This is a problem which concerns the Army very much more than the other two

Services. You will realize the size of the project when I tell you that we estimate that we shall get each year approximately 3,000 potential officers from the National Service intake. It is essential that we do not waste any of this intake, because we shall need 'all of it to make adequate provision for officering the Territorial Army in the future. The immediate problem for the TA is comparatively easy: there are many thousands of released officers suitable to fill posts in all ranks of the TA, but as these officers get older and farther away from their active service experience, they must be replaced by a flow from the lower ranks. This can only be adequate, both as regards numbers and standards of training, if we make good use of the National Service man's twelve months with the Colors.

The present is an interim period, when we have the National Service man for a period of twenty-four months, gradually running down to twelve months by the time the new Act comes into operation on 1 January 1949. Further, men being called up now have no Reserve obligation, and will only be assets to the Territorial Army if they volunteer to serve in it. Our plans are aimed at getting ready for 1949, when the problem becomes most difficult, with a short period of Color Service and because men have their six-year Reserve obligation. Our problem is, therefore, how to find the potential officer as quickly as possible, and how to give him officer training in the shortest reasonable time so that he may have the maximum possible time of service in a unit in order to practice what he has been taught theoretically in the Officer Candidate Training Unit.

We hope that before he enters the Army the National Service recruit will have served some time in one or other of the pre-Service training organizations. This form of training has almost certainly the effect of developing leader-

ship qualities in many who would otherwise not have the opportunity.

In March 1948, the Army changed its methods of initial allocation and training of National Service recruits. Instead of entering all men for the General Service Corps, where their qualifications for Arms and their potentialities as officers are tested, we are going to allot men to Arms before they are called up. Their Service will be carried out in the Arm to which they are allotted initially, except that there will always be a small percentage who, when full selection procedure is carried out, are found to be more suitable for employment in some other Arm and will then be transferred. We hope to train any particular man to be an officer in the Arm to which he was allotted originally or to which he was transferred at the very beginning of his service.

The officer training of the National Service soldier will be carried out at an OCTU in the same way as during the late war and at present. We intend to have two of them. The eventual plan is to give the potential officer sixteen weeks training, divided into two phases: an elementary six weeks phase at the same OCTU, during which progressive instruction is given on an "Arms" bias. He is then given a National Service Commission. As the length of officer training varies considerably from one Arm to another, this plan will involve further initial training in the technical Arms, carried out at the school of the Arm concerned.

The cadet, by this time, will have become an officer. The policy of giving commissions to all cadets after the same number of weeks training is a new one; we are adopting it partly because we have found that soldiers are apt to shy off the Arms in which they have to spend more time as a cadet and less as an officer. When the total compul-

sory service with the Colors is only twelve months, this feeling will naturally be more pronounced.

The soldier will reach the OCTU in very much the same way as he does at present, but with greater emphasis laid on the necessity for speed in doing so. The selection testing carried out in the first two weeks of training will bring to notice the potential officer. These soldiers, and any others whose potentialities are noticed by their commanding officers, will be examined by the Unit Selection Board, which exists in every unit. The candidate will then go to a War Office Selection Board. Its object is to find the candidate with the necessary intelligence, character and leadership qualities to make him worthy of officer training. These boards have abundantly proved their worth and are being copied outside the Services. They have been criticized, but usually by those who are ill-informed.

The very maximum officer service which the National Service soldier can put in, before his twelve months are up, is about five or six months. Those who are not selected very quickly, and those who have to do young officer training after leaving the OCTU, will do very much less. There may, in fact, be men who only finish their officer training in time to go to the Reserve. Even these latter will be worth training because of the service which they will give to the Territorial Army. It is obvious that the object of training for National Service officers, during the balance of their Color service, is to give them experience in command of sub-units.

The Short Service Regular Officer

Except for specialists, such as doctors, and an experimental scheme which was carried out in a small way just before the late war in some technical Arms, the Short Service Officer is a new concept for the Army. There is,

however, a very good reason why we consider that he is likely to be part of the permanent postwar setup, namely as a measure to improve the career prospects of the Regular officer. Obviously the smaller entry each year into the Regular Army the more chances each individual has of promotion to higher ranks and, in particular, to Lieutenant Colonel, which is the first bottleneck now that time promotion exists up to major. The shape of the Army, i.e., the number of platoon and similar commands required in relation to the number of senior posts, must always entail severe crowding-out at the higher ranks, i.e., compulsory retirement more than we think reasonable to make the Army an attractive career. The permanent introduction of a quota of Short Service officers, primarily filling subalterns' posts, is the best measure to increase the prospects of those granted Regular Commissions. Naturally a proportion of career Commissions will be available for the best of the Short Service officers.

The Reserve Officer

By far the largest part of the Reserve Army will be the Territorial Army. In addition there will be (as in pre-1939 days) a Supplementary Reserve (some of the members of which take on a higher obligation than those in the Territorial Army); the Regular Army Reserve of Officers; and the Territorial Army Reserve of Officers—forms of Reserve in which it is unlikely that the members will do training; and, finally, the Army Officers' Emergency Reserve, membership of which is on the basis that the individual gives an honorable undertaking to be called up for service in an emergency but has no legal liability to do so.

I will deal only with the Territorial Army. I have already mentioned the two main sources of officers in the TA, namely at present the released Emer-

gency Commissioned officer and, eventually, the National Service officer at the end of his twelve months fulltime service, carrying out his six-year obligatory part-time service and, we hope, volunteering at the end of that time to stay on in the TA, in the higher ranks, as a form of public service and, we hope, also as a hobby.

There will also be one additional source of officers, namely from the ranks of the Territorial Army. Opportunity will always exist for the Warrant Officer, NCO, or man in the Territorial Army to apply for, and be granted, a Commission. Training this type of officer will be difficult. Unless he is exceptional and can devote appreciable time to special officer training, we will have to do the best we can within the periods, full-time or part-time, which the individual is able to devote to officer training. Some form of central training will be provided.

Conclusion

There are four points which are the high-lights of our plan for the future.

1. The cycle for the Regular officer, i.e., the average career, is something over twenty-five years. At the present time, it is inevitable that the factors on which we plan these careers are not firm. Therefore we have to move slowly, and it is not easy to avoid mistakes which may have consequences over a long period. Regular officers naturally ask us often what is likely to be their future, or what are the prospects for a young man wishing to make the Regular Army a career. We want to make it clear that there is no likelihood of there being an axe on Reg-

ular officers. The number of Regular Commissions now held is not more than about 60 per cent of the officer posts which we contemplate having to fill for the postwar Army; the balance are Short Service officers. Any considerable change in policy, therefore, can be adjusted in a short time by our future policy with regard to short term Commissions.

2. The Army will always be faced with the difficulty of giving adequate career prospects to the Regular officer, i.e., the reasonable prospects of promotion, because of the large number of junior officers required as commanders of platoons and troops in comparison to the number of senior posts. Adequate promotion prospects for the Regular can only be insured by continuing the Short Service scheme as a permanent feature of the Regular Army.

3. The organization of the Army into Corps and Regiments gives us a different angle on the problem which is facing all three Services, viz, the need to balance the production and training of our many types of specialists, and the general training which is required of all officers to fit them for staff employment and the higher command.

4. We have to perfect our arrangements for the selection, training and employment of National Service officers, all within the space of twelve months. This demands skill and sound judgment in making a quick selection of potential officers, and very high-pressure training both at the OCTUs and in the units in which these officers will spend their final months of Color service.